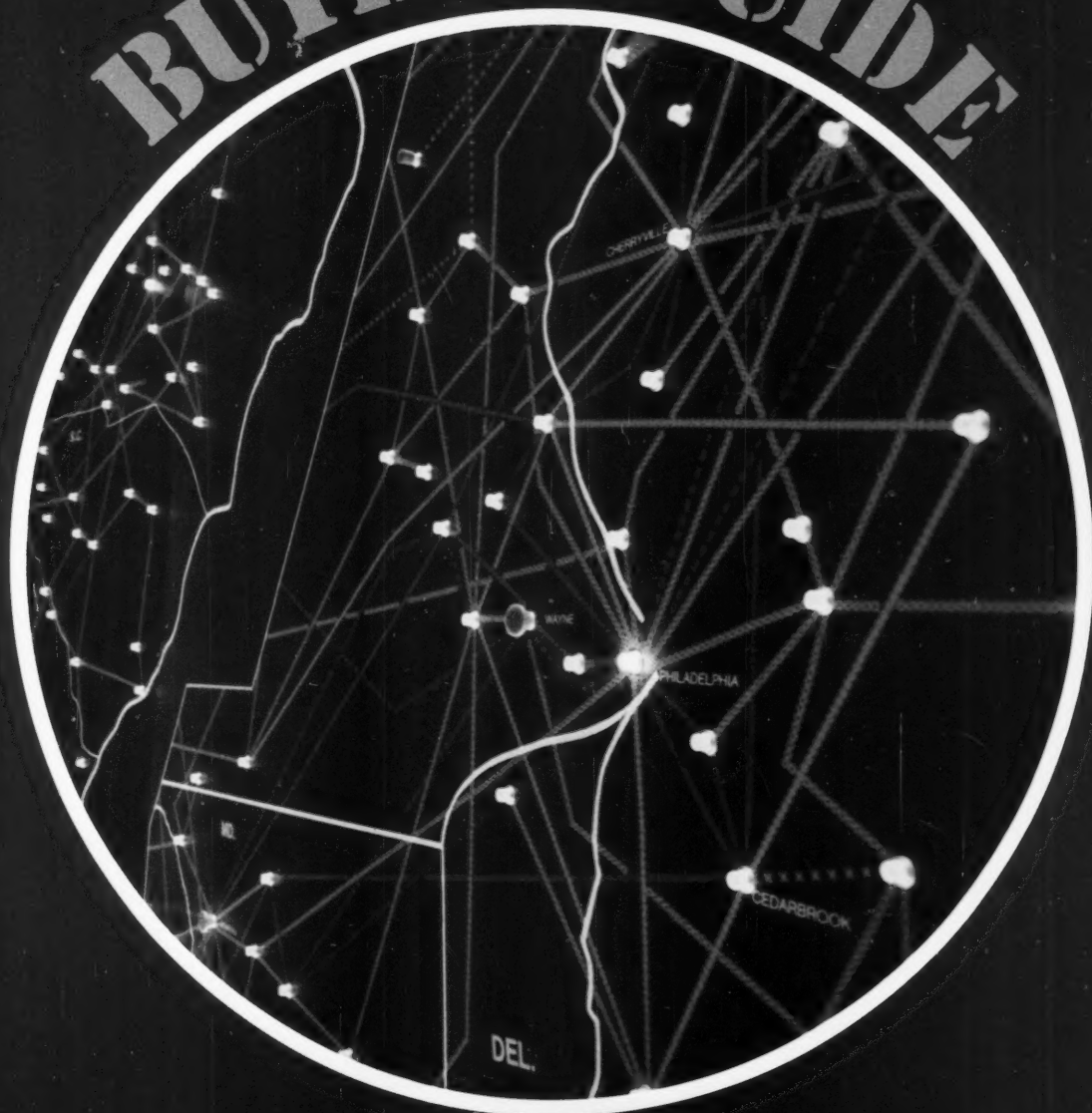


Data Communications

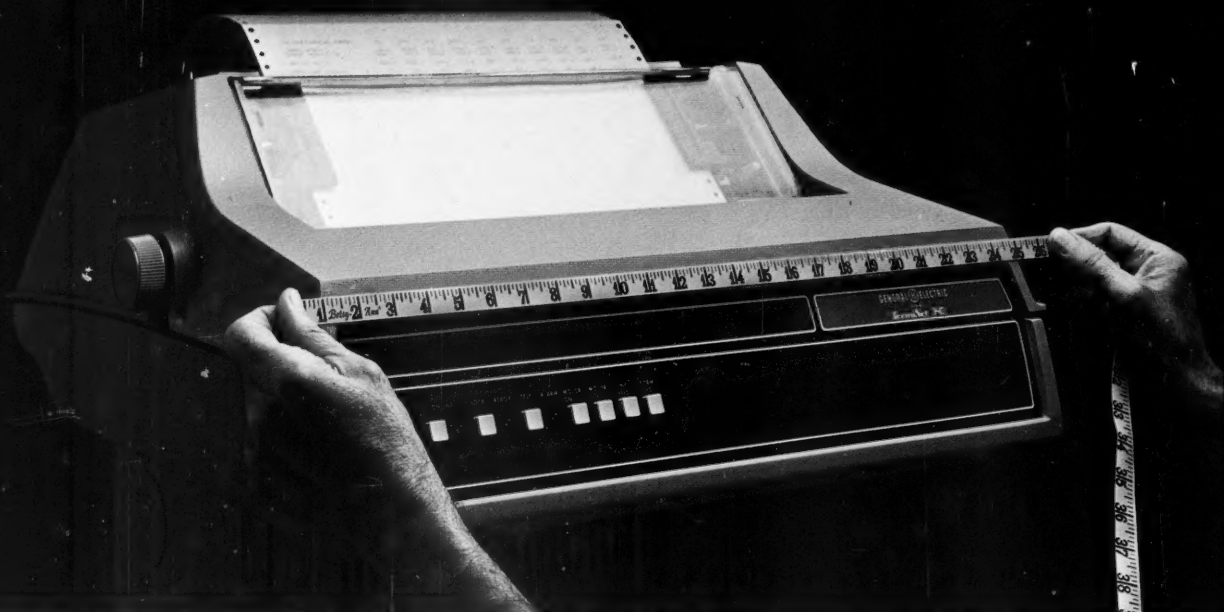
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1980

BUYERS' GUIDE



McGraw-Hill's
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for the data communications user



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Data Communications

BUYERS' GUIDE 1980

The one place to look for information on products and services used in data communications, distributed data processing, and computer networks.

November 1979

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How to use the Data Communications Buyers' Guide

The Buyers' Guide is organized into three basic sections, each planned to serve your specific needs:

1. Products and Services Directory p. 5

Products associated with data communications are divided into 9 general sections. For each section, there is a dissertation on the state of the art of the technology followed by the names of companies that supply each of the products in that section. Boldface listings are keyed to advertisements which offer additional information on products and services. (See product index on page 6)

2. Update Service p. 201

Special self-addressed, postage paid cards are available in this section so the reader, all year long, may request additional information regarding a product from any of the participating companies. Readers may also request to be put on a mailing list for future development of any product from the participating companies.

3. Vendor Directory p. 301

This directory contains an alphabetical listing of known suppliers for equipment and services in the data communications market. Information on each company includes company name, address, telephone number; name of person to contact; products manufactured or services offered; sales offices plus page references to advertisements which offer additional information on products and services.

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Facsimile-service carriers
International record carriers
Message (including telegraph) carriers
Packet-switching carriers
Satellite carriers
Specialized carriers
Telephone companies
Value-added carriers

Communications Carriers

The shift toward competition in the data communications carrier field over the last 12 months has resembled something of a soap opera. Alternately swaggering and cringing, the principal actors have declared new services, backed off from their promises in some cases, cried foul on numerous occasions, have become hand-wringingly cautious, or have turned sullen when pressed for details. However, they have always managed to rally intrepidly when the organ music swells and the conversation turns to benefits to users.

In January, AT&T's Dataphone digital service (DDS) was still in tariff limbo and that, along with the seemingly permanent uncertainty that characterized ACS, elicited warnings from the FCC about "prescribed" tariffs as well as an unsettled feeling by users looking over their carrier options.

At the same time, GTE announced its intention to take over Telenet. The plan was to infuse large numbers of dollars into Telenet, which, while growing at a 200- to 300-percent rate annually, was losing \$1

million every three months—enter the "white knight".

Tymnet, for its part, insisted that what it lacked in financial backing was more than made up in technical and managerial skills. Indeed, Tymnet's list of services then exceeded those of anyone else in the business, and its geographic coverage equaled Telenet's (Table).

Through January, users' options looked very good, and February brought more of the same. Despite regulatory cloudiness, Satellite Business Systems (SBS) announced that it was keeping to its schedule. With the FCC in its camp and pre-operational testing well under way, SBS's confidence that it could satisfy the courts on charges of antitrust violations seemed well founded.

Meanwhile, AT&T's Advanced Communications Service (ACS) was beginning to face the first of many stiff tests regarding the country's need for such a Bell-backed service. Both Tymnet and Telenet charged that ACS offered nothing innovative, and that Bell should be barred from offering a "me-too" service. In view of AT&T's long-standing complaint that specialized

carriers were merely "cream-skimming" with cheap, unimaginative services that Bell already offered, the Telenet and Tymnet charges had almost comic undertones. The specter of what happened to Datran in similar circumstances, however, kept a lid on any potential hilarity.

A possibly more serious charge against AT&T surfaced in CBEMA's February statement that ACS was, in fact, not a communications service at all. Using the same tactics with which it tried, and failed, to have the Dataspeed 40/4 barred from the market, CBEMA charged that ACS was a data processing service rather than a data communications one.

Also in February, Xerox announced that it would seek to improve its position as a potential carrier through an agreement in principle to buy Western Union International and its Telex cablegram and satellite services. Although XTEN was still in the early formative stages, Xerox clearly had big plans.

Ma Bell's blues

The ACS saga continued into March—with AT&T announcing that it was not ready to file its ACS tariffs. There was further trouble for Bell when the FCC's Common Carrier Bureau once again rejected AT&T's DDS tariff proposal. With ACS hinging on DDS, Bell was getting nervous and suggested a huddle with the FCC to hash things out.

Also in March, competitive pressure in the carrier field built up as a result of Tymnet's introduction of its first Advanced Communications Technology (ACT) customer. Tymnet said that its direct challenge to ACS had been accepted by TRW's consumer and business credit card service in California.

As Spring bloomed so did the opponents of ACS. In final filings opposing FCC approval of the service, Bell's competitors claimed that both the nature and cost of ACS were in doubt. The chief complaint was that AT&T had no justified tariffs. And IBM kept pushing to have the service offered only on a deregulated basis.

Congress entered the fray in April because of a late-March proposal to free AT&T from all restraint in its service and product offerings. The Hollings amendment, as S.611 has come to be known, would substitute competition for monopoly regulation in large segments of the telecommunications marketplace. Although AT&T stands to gain through open entry into such areas as terminals and information services, it quietly complained about aspects of the amendment that would remove its immunity from antitrust suits.

The amendment received mixed reviews. SBS said it welcomed the chance to deal with AT&T in an openly competitive environment, and Tymnet said it felt that the "intent" of the amendment to be in the industry's interest. Communications Satellite Corp., however, expressed "shock" and "dismay." Western Union was only "somewhat gratified" over a provision that would allow it to enter the international arena.

May flowers

In May, there was a round of testimony before House and Senate committees in which all sides repeated long

held opinions on what should and should not be allowed in carrier competition. However, May marked the beginning of new competitive services for the international record carriers. ITT World Communications' Infotex stunned many observers with its price structure. With a speed of 50 bit/s and a cost of \$3 per minute, Infotex looked like a mistake, until ITT started talking about the rationale behind the move. Developing nations, reasons the carrier, use fewer data communications services because many are technologically beyond the capabilities of smaller, poorer countries. Infotex is designed to open the market to the Third World by giving users there a peek at what they can have if they upgrade their installed equipment base—and increase volume accordingly. As it now stands, Infotex offers users in developing nations a link to U.S. databases through Telenet and Tymnet. The benefits derived from accessing health-service databases, among others, are expected to coax administrators around the world into shelling out more now in the hope of paying less later.

June woes

The FCC in June thwarted the planned GTE/Telenet merger. The conditions under which the FCC would approve the merger were such that Telenet would have been restricted from enjoying any financial benefit from the deal.

It was also during this month that legislators hoped the different versions of a Communications Act of 1934 rewrite would yield an acceptable way to let AT&T compete without gaining the lion's share of the market. Everybody but Bell seemed anxious to solve the problem. AT&T stubbornly insisted on its perceived right to compete where it wants. Bell continued to push for regulated status for its manufacturing arm.

Meanwhile, the battle over SBS continued, with the FCC and the Justice Department taking opposing views. The former thinks SBS is fine for competition while the latter shudders at the thought. That fight will not be soon resolved. Still, SBS continues to move ahead on the assumption that the outcome will be in its favor.

Perhaps the biggest news in June was the conclusion of Computer Inquiry II. In a major policy move that paralleled the direction of deregulation legislation in Congress, the FCC ruled that any communications services that involve data processing equipment or activities will not only be minimally regulated, but also marketed in a maximally competitive environment.

In a related move, the FCC made it clear that it intends to further deregulate competitive intercity services offered by specialized carriers. Also, the commission rejected a Common Carrier Bureau filing that would have put loose guidelines on the prices that competing carriers can charge.

These FCC actions added up to the most important policy directives from the agency since the Carterfone and specialized carrier decisions at the turn of the decade and the echoes will be heard for some time.

Following June's carrier-regulatory pyrotechnics, Hughes Aircraft moved quietly in July toward offering

Functional comparison of ACS, Telenet, and Tymnet

FEATURE	TELENET	ACS	TYMNET
VIRTUAL CALL SERVICE			
• HIGH PRIORITY (INTERACTIVE USERS, MINIMUM TRANSIT DELAY)	NOW	PLANNED	NOW
• LOW PRIORITY (NONINTERACTIVE, LONGER PACKETS TRANSFERRED)	PLANNED	PLANNED	?
• PAST SELECT (INQUIRY TRANSACTIONS)	PLANNED	PLANNED	?
• RECEIVE COLLECT CALLS	NOW	PLANNED	NOW
NETWORK MESSAGE SWITCHING SERVICES			
• MESSAGE DELIVERY			
A. UPON DEMAND	PLANNED	PLANNED	NOW
B. AUTOMATIC DELIVERY	PLANNED	PLANNED	PLANNED
• MESSAGE STORAGE	PLANNED	PLANNED	NOW
• MULTIDESTINATION (BROADCAST) MESSAGES	PLANNED	PLANNED	NOW
• DELIVERY ACKNOWLEDGMENT	PLANNED	PLANNED	NOW
• MESSAGE TEXT EDITING	PLANNED	PLANNED	?
• DATA ENTRY FORMATTING	?	PLANNED	?
PRIVATE NETWORK SYSTEMS			
• UNDER TARIFF	NOW	PLANNED	NOW
• LEASE/PURCHASE	NOW	?	NOW
• CUSTOM PROTOCOLS BY REQUEST	NOW	?	NOW
NETWORK MANAGEMENT			
• NETWORK CONTROL CENTER	NOW	PLANNED	NOW
• CUSTOMER NETWORK CONTROL CONSOLE	NOW	PLANNED	?
• DETAILED CALL ACCOUNTING	NOW	PLANNED	NOW
• LOGICAL SUBNETWORKS	NOW	PLANNED	NOW
• USER AUTHORIZATION IDS/PASSWORDS	NOW	PLANNED	NOW
• NETWORK COMMAND LANGUAGE	NOW	PLANNED	?
• DATA ENTRY LANGUAGE	?	PLANNED	?
HOST INTERFACES			
• EMULATION			
TTY	NOW	PLANNED	NOW
IBM 3271 BSC	PLANNED	PLANNED	PLANNED
IBM 2780/3780 BSC	NOW	PLANNED	NOW
IBM HASP MULTILEAVING	NOW	?	NOW
• MESSAGE LEVEL	?	PLANNED	?
• X.25 PACKET MODE	NOW	PLANNED	NOW
TERMINAL INTERFACES			
• ASYNCHRONOUS CONTENTION (UNBUFFERED TERMINALS)	NOW	PLANNED	NOW
• ASYNCHRONOUS CONTENTION (BUFFERED TERMINALS)	NOW	PLANNED	NOW
• ASYNCHRONOUS POLLED	PLANNED	PLANNED	?
• SYNCHRONOUS POLLED	PLANNED	PLANNED	NOW
A. IBM 3270			
• SYNCHRONOUS CONTENTION			
A. IBM 2780 BSC	NOW	PLANNED	NOW
B. IBM HASP MULTILEAVING	NOW	?	NOW
GEOGRAPHIC COVERAGE			
• 1979	OVER 150 CITIES IN U.S.	NONE	OVER 150 CITIES IN U.S.
• 1980	OVER 309 CITIES IN U.S.	?	OVER 200 CITIES IN U.S.

common carrier services for commercial accounts. Its first step was a \$335 million, worldwide network for the U.S. Navy consisting of four Leasat satellites. Some of the transponders may be leased to commercial users by 1982.

Walking softly

Another common-carrier issue to crop up in July was the Department of Defense's low-key effort to get AT&T to unbundle T-1 carrier channels. The DOD wanted the FCC to "prescribe" a low tariff on the 1.5-Mbit service—in effect, to mandate a cost-based tariff. AT&T, predictably, resisted the effort.

This month also brought the merger of Telenet and GTE.

As the summer died, so did the rewrite of the Communications Act of 1934. The unexpectedly rapid demise in August of three years' work resulted from the withdrawal of support for the measure by Rep. Lionel Van Deerlin (D.-Calif.), sponsor of the measure and chairman of the rewriting group. He said the House communications subcommittee just couldn't handle the job. Instead, he will seek to amend the existing

Communications Act in stages, beginning with common carrier issues, particularly the manufacturing/service structure of AT&T. ■

For more on carriers see the following Data Communications articles:

1. "AT&T Answers 15 Questions about Its Planned Service," George R. Davis, February 1979, p. 41. Salient characteristics of Bell's Advanced Communications Service as extracted from AT&T's "Responses to Information Requests" document.
2. "New Alternative for Corporate Data Networks," Stuart L. Mathison, April 1979, p. 83. Private packet networks are explored with an eye to examining the rules that govern this relatively new technology. Users accustomed to selecting architectures for mainframes should pay close attention to the differences.
3. "What Will Congress Do to Change Data Communications?" Terry G. Mahn, June 1979, p. 57. Senators Hollings and Goldwater and Rep. Van Deerlin have introduced proposals to revamp communications practices. Here, the bills' complexities and consequences are compared.

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 AT&T Assoc Telephone Co
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 Graphnet Inc
 Teaneck, NJ
 ITT World Communications Inc
 New York, NY
 Muirhead Inc
 Mountainside, NJ
 RCA Global Communications Inc
 New York, NY
 SP Communications
 Burlingame, CA
 Western Union International, Inc
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 FTC Communications Inc
 New York, NY
 ITT World Communications Inc
 New York, NY
 RCA Global Communications Inc
 New York, NY
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 Western Union International, Inc
 New York, NY

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 TRT Telecommunications Corp
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 Tymnet Inc
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 Nashville, TN
 RCA Global Communications Inc
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 TRT Telecommunications Corp
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 New York, NY
 RCA American Communications Inc
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 Sunnyvale, CA
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 SP Telecommunications Processing Co
 New York, NY
 Stanford Telecommunications Inc
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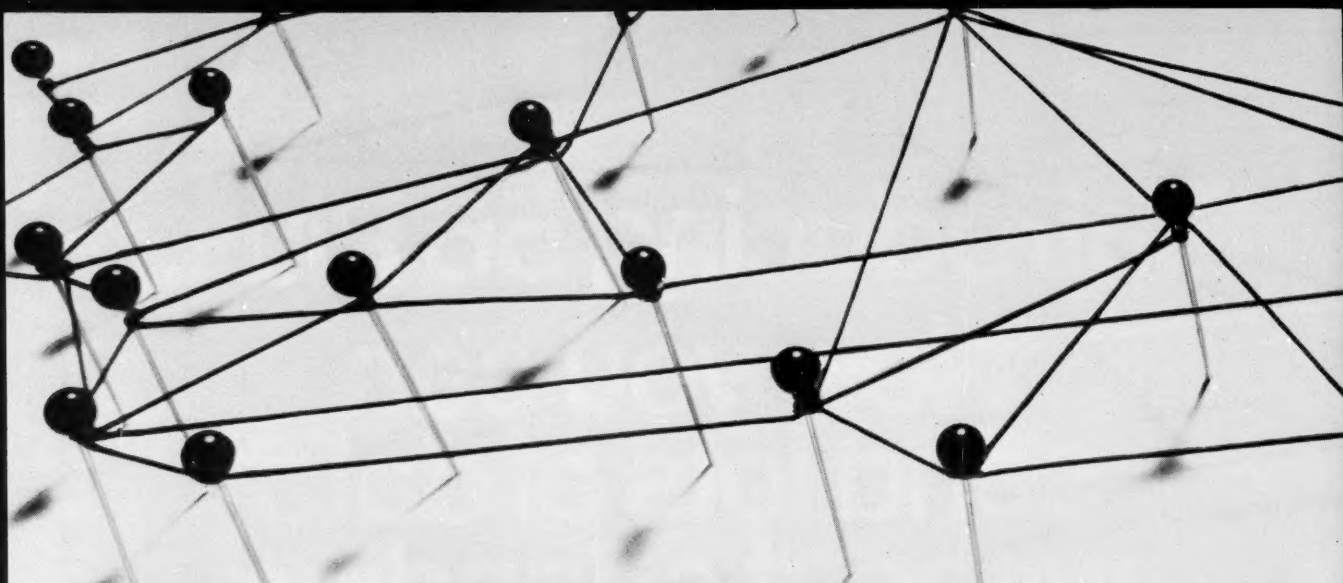
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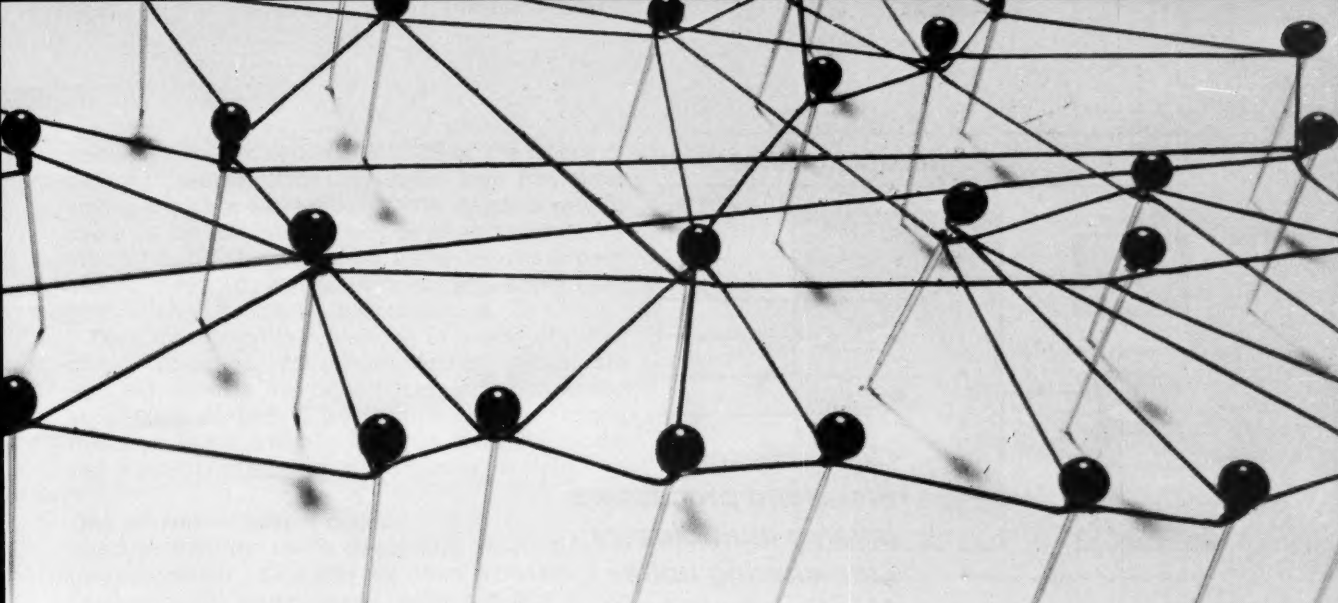


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Multiplexers, group band
Packet selectors
Port-sharing units
Remote network processors

Data Concentration Equipment

Two of the most rapidly evolving pieces of data concentration equipment are the PBX and the communications processor. During the past few years, the slow technological growth of the PBX has given way to rapid increases in PBX efficiency and user features. As a result, there has been an explosive growth in the PBX user base.

Right now, in fact, predictions of the PBX's future role indicate that it is to become both the bridge to the information era—office of the future, teleconferencing, and electronic mail—as well as a reliable piece of hardware for controlling communications costs.

The principal reason for the new face of PBX technology is its marriage to the computer, or more precisely, to the minicomputer. Although this link seems natural today, it wasn't until data communications began to capture increasing line capacity that the computer was completely embraced by PBX manufacturers. In today's vocabulary, the computer-controlled exchange is most commonly called a CBX or simply a switch.

But even though computer controlled, a CBX is not necessarily all digital in design. Many major suppliers are still providing analog switches; one example is AT&T's Dimension, the most widely used CBX.

But this is more a result of past designs being extended by industry leaders that technological choice. It is clear that the analog orientation is soon to change.

There are many reasons for using a digital switch in today's data communications environment. Here are some examples why:

- AT&T is slowly converting its analog network to a digital one.
- The recently announced planned data communications services are almost all digital.
- Economies of scale involved in the manufacture of digital circuits mean less expensive devices.
- A digital switch can handle more information than its analog counterpart.
- The digital switch is a lot easier to maintain.

Although it is apparent that digital technology will

increasingly be incorporated into CBXs, the means of converting analog voice into digital form may differ among products. Until recently, the standard way to make the conversion has been by using a pulse-code modulation (PCM) scheme. But some CBXs have been manufactured with a modulation scheme called delta modulation, and more are likely to surface.

Delta modulation is actually an extension of pulse-code modulation. With PCM, analog signals are sampled at twice the highest frequency rate of the signal being digitized. In delta modulation, the sampling frequency is much higher, and thus, theoretically, the digital output more closely approximates the input.

One scheme—cheaper codec

Although from the user's perspective the modulation method used in a CBX may not seem important, it is. Semiconductor manufacturers point out that if one modulation scheme were universally adopted, they would be able to supply a cheaper circuit to do the job. The circuit, called a codec (for coder decoder), is now available from almost all semiconductor makers, with various modulation schemes.

As the need for more exotic applications are filled by CBX manufacturers, a wide variety in the actual switching elements will surface. Today, CBXs switch voice and data using either space-division techniques or time-division methods. Space-division switching is the older technology and the most widely used. It involves the assignment of discrete lines to form a path for communications. Time-division switching, on the other hand, assigns time slots for a signal to enter a line; thus one line can serve several stations simultaneously. This is particularly useful for data switching where slight delays between message blocks have no effect on the entire message.

Concentration is used in CBXs to provide increased user access. If a CBX switch has 100 lines inside a building and is connected to 20 trunks, it would appear as a switching system with 120 inputs and 120 outputs.

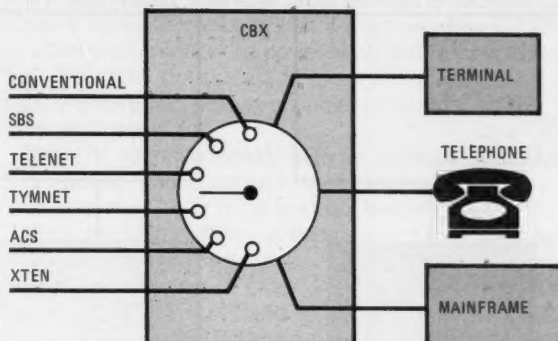
Concentration trade-off

At any one time, this switch would be able to make any one of 14,400 (120 x 120) connections. If this same switch were placed inside another CBX with 200 lines and 40 trunks, it would have a 2-to-1 concentration ratio, because only 120 stations could be used at once. If a call were to be made to the CBX, and all 120 ports were in use, the call would be blocked. If fewer than 120 stations were in use, the call would be connected. The higher the concentration level, the higher the probability of blocked calls (assuming equal station usage). Some CBX manufacturers allow users to select a concentration ratio.

'You ain't seen nothin' yet'

The major reason for the recent excitement over CBXs has less to do with how they operate than with what they do for users. Moreover, in the vernacular of the carnival barker, "You ain't seen nothin' yet." Although today's CBXs are extremely sophisticated and highly intelligent, they have yet to take advantage of the

1 Future application



newest in electronic technology—fiber optics and ultra-large-scale integration. Also, new CBXs will probably be capable of a fuller mix of voice and data.

Farther ahead is the full-function CBX, which not only will serve as a controller for internal applications, but also will automatically select the least expensive data service for communicating between widely dispersed nodes. It is not inconceivable that a large user will be able to subscribe to many or all of the planned data services. Figure 1 details the kind of data service management possible in a few years through the use of a CBX.

Of course, with this capability comes CBX networking. As a network element, the CBX can be viewed as a concentrator externally, and as a computer-controlled switch for internal needs.

Another network element

An older—but constantly evolving—network element is the communications processor (CP). Its proper application leads to greater network operating efficiencies.

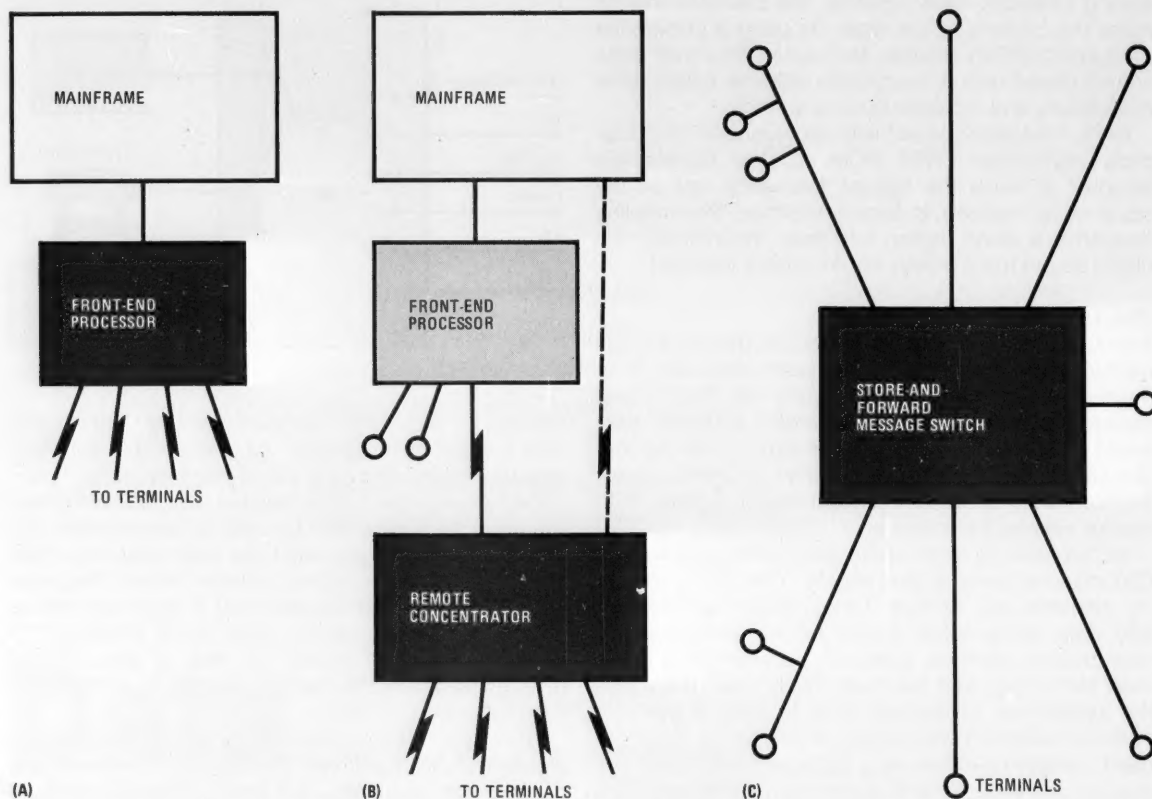
Recent developments in CP architecture have led to the following:

- Increased use of microprocessor and multimicroprocessor technology.
- A tendency toward modular use of CP components.
- The placing of more decentralized intelligence (interfacing with network devices as a separate module) away from the CP's central processor, trading off increased central management against reduced central functions.
- Distinct differences in vendor philosophy in regard to how functions are controlled.

The communications processor is often not a single device, nor are its functions limited to one network location. Basically, a CP is used as (1) a front-end processor, (2) a remote concentrator, and (3) a message switch. The packetizing processor represents another CP use, but is considered a special form of the message switch communications processor.

Each of the three basic categories is shown in Figure 2, represented in somewhat simple network arrangements. As a front-end processor (FEP) (Fig. 2A), the CP is located at its host computer. A prime function of

2 Processor variations



the FEP is to relieve the host of network communications overhead.

When physically located at or near the distant terminal devices served, the CP is known as a remote concentrator (Fig. 2B). The connection back to the host computer may be direct (dashed line, asymmetrical) or through a similar CP acting as an FEP (solid line, symmetrical).

The prime purpose of locating the CP remotely is to reduce the cost of running multiple lines to distant terminals by running fewer to the remote CP. A combination of short runs between the terminals and the remote concentrator plus the CP connections back to the host are usually more cost effective than multiple long runs. In the symmetrical arrangement, when some terminals are located near the host, access to host applications by these terminals may be made through the FEP rather than through the remote concentrator, as shown in Figure 2B.

Another CP function is store and forward of data when used as a message switch. Elements of this function exist in the FEP and remote concentrator. But when switching is the primary function, the network may be represented more accurately by Figure 2C.

As supplied to the user, a communications processor will resemble a minicomputer or look like an entirely different unit. In the latter case, the equipment is

supplied by an independent vendor who designs and builds his own processor.

Networking

When a communications processor is used as a "pure" message switch (Fig. 2C), no connection is needed to a host computer. Only when the network's terminals must also have access to a host's resources—such as particular applications—is switch-to-host connection required.

Although IBM's 3705 should always have access to a host—to the point of not having its own peripherals—the independents and the minicomputer vendors provide stand-alone switches. Disk storage and other peripherals are also available.

The CP's network functions—besides being a store-and-forward message switch—include buffering and queuing for load leveling. That is accomplished by what IBM calls pacing, otherwise known as throttling. The technique consists of the processor's sensing an impending overflow situation at a receiving device, and either temporarily storing the data that would have caused an overflow, or stopping the sending device until the receiver is ready again.

A CP feature that exercises another form of traffic control is called fast/slow poll. Here, terminals are polled normally—fast—until a terminal does not

respond or has no traffic to send. When such non-responses occur, the CP automatically reduces the polling frequency of that terminal. When it again responds with traffic, the terminal is transferred back to a fast-poll mode. The algorithm for establishing polling frequencies and mode criteria are under user control.

It is important to note that the operator of a remote terminal is not aware that he is dealing with an intermediate processor, and not directly with a host computer.

Another network function is logging and journaling. Such information is normally kept on magnetic tape. If this peripheral is not a standard one with the CP, the data is put on disk and transferred onto tape through another facility.

Collecting and monitoring network statistics is yet another CP function. This data may include line and terminal usage, outages, numbers and types of messages, and repeat-request frequency. By keeping track of connect times, the CP can store—for access by the control console—accounting information such as charge-back data.

Network maintenance is aided measurably by the CP. Both software and hardware "bugs" may be detected, isolated, and analyzed by CP console action, which also can assist in correction. Non-host-dependent diagnostic capabilities are featured in some communications processors.

One notable feature of the communications processor—most apparent with the independent offerings—is the ability to deal with a variety of terminal types, speeds, and codes. Enabling each type to communicate with the others requires CP conversions, which are made possible by a combination of line interface devices and software. Standard speeds and codes are readily handled; non-standard ones may be accepted, but usually require some reprogramming. Similarly, standard protocols—such as asynchronous and binary synchronous (BSC) communications—are accepted by the CP. And those processor vendors who do not yet offer the newer protocols—such as the bit-oriented ones and X.25—are, in general, planning to do so in the near future.

Operating without the host

There are situations when the CP, not functioning as a switch, may operate without a host. For example, if the host computers shown in Figure 2 become disabled, the terminals—in the case of many processors—may still communicate with each other. Of course, there will be degraded service. But if the CP is so designed, it may queue application requests until the host is again operational and on line.

To relieve the host of as much of the network operational responsibilities as possible, the efficient CP

manages such functions as message routing and network reconfiguration. Routing tables are maintained at the CP. When a simple table change or update is needed, some CPs require just a console entry—such as a terminal identifier to correspond with a new location. But when the update is more complex, the new data is entered as part of an initial program load (IPL) or system generation.

Network reconfiguration data is entered similarly. This routing and configuration information is totally resident in the CP, with the host not involved.

Many low-end network applications can be filled by statistical multiplexers, also called intelligent time-division multiplexers (ITDMs). Specifically, referring to Figure 2, the front-end and remote processors of 2B can be replaced by ITDMs if the required functions can be met. Lower cost and transparency are gained. ■

For more on data concentration equipment see the following Data Communications articles:

1. "7 Steps to Picking the Best Communications Processor," Ivan Frisch, November/December, 1976, p. 25. A great deal hangs on the choice of communications processors. An orderly approach to processor selection avoids pitfalls of inappropriate equipment.
2. "How Concentrators Can Be Message Switchers as Well," Charles J. Riviere and Richard A. Cooper, April 1977, p. 51. Besides relieving the host computer of many of its processing tasks, the concentrator shortens delays and may also provide a fallback path.
3. "What Intelligent Time-Division Multiplexers Offer," Raymond Sarch, July 1977, p. 29. Special features of the ITDM—or statistical multiplexer—include concentrator functions, but the conventional mux benefits—especially transparency—stay on.
4. "How Statistical TDMs Let Network Lines Support More Terminals," Ross Seider, September 1978, p. 95. A close look at the techniques shows how statistical muxes achieve line economies, and also reveals pitfalls in queuing delays.
5. "Communications Processors—Trends and Trade-offs," Raymond Sarch, January 1979, p. 39. One way to attain greater network efficiency is through the proper use of a communications processor. Here is a description of some of the applications, and what makes a CP tick.
6. "The Changing Face of the Private Branch Exchange," George R. Davis, August 1979, p. 43. A far cry from the PBX of just a decade ago, today's and tomorrow's computer-controlled exchange—or CBX—is not only a sophisticated switch, but also a problem solver. Increasing use of concentration and digital techniques—combining voice and data—is making the CBX a valuable network element.

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InteCom Inc
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MICOM SYSTEMS INC
Chatsworth, CA **ADV PGS 32,33**
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Conversational Systems Corp
New York, NY
Custom Terminals Corp
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Dobson Woodbury Research Inc
Salt Lake City, UT
Epic Data Corp
Richmond, BC
Franklin Systems Corp
Westlake Village, CA
General Automation
Anaheim, CA
General Datacomm Ind Inc
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Honolulu, HI
Honeywell Information Systems
Waltham, MA
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Innovative Electronics Inc
Miami Lakes, FL
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Kaufman Research
Los Altos Hills, CA
Magnuson Systems Corp
Santa Clara, CA
Memorex Corp
Cupertino, CA
Micom Systems Inc
Chatsworth, CA
NCR Corp
Dayton, OH
Paradyne Corp
Largo, FL
Periphonics Corp
Bohemia, NY
Perkin-Elmer
Oceanport, NJ
Phone 1 Inc
Rockford, IL
Plessey Fairfield
Div Plessey Inc
Fairfield, NJ
Raytheon Data Systems
Mansfield, MA
RCA Global Communications Inc
New York, NY
Rockwell-Collins
Dallas, TX
Sidercal Corp
Portland, OR
Sperry Univac, MCO
Irvine, CA
Storage Technology Corp
Louisville, CO
Timeplex Inc
Rochelle Park, NJ
TRAN Telecommunications Corp
Marina Del Rey, CA
TRT Data Products Inc
Norfield Comm Div
East Norwalk, CT
Utec Corp
Clifton, NJ
Wavetek Data Communications
San Diego, CA

FRONT-END PROCESSORS

CODEX CORPORATION
Mansfield, MA **ADV PGS 81-88**
DIGITAL COMMUNICATIONS CORP
Gaithersburg, MD **ADV PG 79**
GANDALF DATA INC
Wheeling, IL **ADV PG 51**
HEWLETT-PACKARD CO
Palo Alto, CA **ADV PG 79**
INNOVATIVE ELECTRONICS INC
Miami Lakes, FL **ADV PG 153**
AM Jacquard Systems
Santa Monica, CA

Applied Systems Corp
St Claire Shores, MI
Arbor Communications Corp
Palo Alto, CA
Associated Computer Consultants
Santa Barbara, CA
Basic Four Corp
Santa Ana, CA
Billings Computer Corporation
Provo, UT
Bolt Beranek & Newman Inc
Computer Systems Div
Cambridge, MA
Boston Financial & Equity Corp
Boston, MA
Cambridge Telecommunications
Burlington, MA
CMC Marketing Corp
Houston, TX
Codex Corporation
Mansfield, MA
ComDesign Inc
Goleta, CA
Compuscan Inc
Teterboro, NJ
Computer Automation
Naked Mini Div
Irvine, CA
Computer Communications Inc
Torrance, CA
Comten Inc
St Paul, MN
Conversational Systems Corp
New York, NY
CSPI
Billerica, MA
Data Communications Corp
Memphis, TN
Data Stream
Brisbane, CA
Digital Communications Assoc Inc
Norcross, GA
Digital Communications Corp
Gaithersburg, MD
Digital Systems Corp
Walkersville, MD
Epic Data Corp
Richmond, BC
Esterline Angus Instrument Corp
Indianapolis, IN
Franklin Systems Corp
Westlake Village, CA
Gandalf Data Inc
Wheeling, IL
General Automation
Anaheim, CA
GNAT Computers, Inc.
San Diego, CA
Hewlett-Packard Co
Palo Alto, CA
Honeywell Information Systems
Waltham, MA
Hydriol Control Systems Div
Houston, TX
Innovative Electronics Inc
Miami Lakes, FL
Intelligent Terminals Inc
Los Altos, CA
Interactive Systems/3M
Ann Arbor, MI
Kaufman Research
Los Altos Hills, CA
Magnuson Systems Corp
Santa Clara, CA
Memorex Corp
Cupertino, CA
NCR Corp
Dayton, OH
Periphonics Corp
Bohemia, NY
Perkin-Elmer
Oceanport, NJ

Plessey Fairfield
Div Plessey Inc
Fairfield, NJ
Quad Systems Inc
Rockville, MD
RCA Global Communications Inc
New York, NY
Rockwell-Collins
Dallas, TX
Sideral Corp
Portland, OR
Software Results Corp
Columbus, OH
Sperry Univac
Blue Bell, PA
Tandem Computers
Cupertino, CA
Telefile Computer Prod Inc
Phoenix, AZ
Texas Instruments
Dig Sys Div
Houston, TX
TRW Communications Group
Los Angeles, CA
Utec Corp
Clifton, NJ
Wavetek Data Communications
San Diego, CA

INVERSE MULTIPLEXERS

ABLE COMPUTER
Irvine, CA **ADV PG 35**
CODEX CORPORATION
Mansfield, MA **ADV PGS 81-88**
INNOVATIVE ELECTRONICS INC
Miami Lakes, FL **ADV PG 153**
MICOM SYSTEMS INC
Chatsworth, CA **ADV PGS 32,33**
ABLE Computer
Irvine, CA
Cambridge Telecommunications
Burlington, MA
Codex Corporation
Mansfield, MA
Data Flo
Hopkins, MN
Innovative Electronics Inc
Miami Lakes, FL
Interactive Systems/3M
Ann Arbor, MI
Kaufman Research
Los Altos Hills, CA
Micom Systems Inc
Chatsworth, CA
National Semiconductor Corp
Santa Clara, CA
Paradyne Corp
Largo, FL
Timeplex Inc
Rochelle Park, NJ
Via West
Phoenix, AZ

LINE SHARING UNITS

CODEX CORPORATION
Mansfield, MA **ADV PGS 81-88**
GANDALF DATA INC
Wheeling, IL **ADV PG 51**
INNOVATIVE ELECTRONICS INC
Miami Lakes, FL **ADV PG 153**
INTERTEL INC
Burlington, MA **ADV PGS 63,89**
KAPUSI LABORATORIES
San Mateo, CA **ADV PG 77**
RACAL-VADIC INC
Sunnyvale, CA **ADV PGS 54,55**

For further catalog information, turn to
UpDate Service Card, page 201.

RIXON INC
Silver Spring, MD **ADV PG 53**
TRT DATA PRODUCTS INC
NORFIELD COMM DIV
East Norwalk, CT **ADV PG 34**
Cambridge Telecommunications
Burlington, MA
Codex Corporation
Mansfield, MA
Develcon Electronics Inc
Doylestown, PA
Electrodata Inc
Walton Hills, OH
Expandor Inc
Pittsburgh, PA
Gandalf Data Inc
Wheeling, IL
Hawaiian Telephone Co
Honolulu, HI
Innovative Electronics Inc
Miami Lakes, FL
International Data Sciences
Lincoln, RI
Intertel Inc
Burlington, MA
Kapusi Laboratories
San Mateo, CA
Paradyne Corp
Largo, FL
Pulsecom Div/Harvey Hubbell
Falls Church, VA
Quad Systems Inc
Rockville, MD
Racal-Vadic Inc
Sunnyvale, CA
RCA Global Communications Inc
New York, NY
Rixon Inc
Silver Spring, MD
Sideral Corp
Portland, OR
TRT Data Products Inc
Norfield Comm Div
East Norwalk, CT
United Data Services Co Inc
Phoenix, AZ
Utec Corp
Clifton, NJ
Via West
Phoenix, AZ

MESSAGE SWITCHERS

DIGITAL COMMUNICATIONS CORP
Gaithersburg, MD **ADV PG 79**
GANDALF DATA INC
Wheeling, IL **ADV PG 51**
GTE TELENET COMMUNICATIONS
CORP
Vienna, VA **ADV PGS 18,19**
TRT DATA PRODUCTS INC
NORFIELD COMM DIV
East Norwalk, CT **ADV PG 34**
Action Communication Systems Inc
Dallas, TX
American Used Computer Co
Boston, MA
Applied Systems Corp
St Claire Shores, MI
Boston Financial & Equity Corp
Boston, MA
Burroughs Corp
Detroit, MI
C&W Incotel Ltd
New York, NY
Cado Systems Corp
Torrance, CA
Cambridge Telecommunications
Burlington, MA
Compression Labs Inc
Cupertino, CA
Computer Communications Inc
Torrance, CA

Comten Inc
St Paul, MN
Conversational Systems Corp
New York, NY
Custom Terminals Corp
Hauppauge, NY
Digital Communications Corp
Gaithersburg, MD
Franklin Systems Corp
Westlake Village, CA
Gandalf Data Inc
Wheeling, IL
General Automation
Anaheim, CA
GTE Telenet Communications Corp
Vienna, VA
Hawaiian Telephone Co
Honolulu, HI
Honeywell Information Systems
Waltham, MA
Industrial Computer Controls Inc
Cambridge, MA
ITT Business Sys & Comm Grp
New York, NY
Kaufman Research
Los Altos Hills, CA
National Data Corp.
Atlanta, GA
National Semiconductor Corp
Santa Clara, CA
NCR Corp
Dayton, OH
Peripherals Corp
Bohemia, NY
Perkin-Elmer
Oceanport, NJ
Plessey Fairfield
Div Plessey Inc
Fairfield, NJ
Raytheon Data Systems
Mansfield, MA
RCA Global Communications Inc
New York, NY
Rockwell-Collins
Dallas, TX
Tandem Computers
Cupertino, CA
TRT Data Products Inc
Norfield Comm Div
East Norwalk, CT
Tymnet Inc
Cupertino, CA
The Western Union Telegraph Co
Upper Saddle River, NJ

MINICOMPUTERS

ABLE COMPUTER
Irvine, CA **ADV PG 35**
DATA GENERAL CORP
Westboro, MA **ADV PGS 37,38**
GTE TELENET COMMUNICATIONS
CORP
Vienna, VA **ADV PGS 18,19**
HEWLETT-PACKARD CO
Palo Alto, CA **ADV PG 79**
PRIME COMPUTER INC
Wellesley Hills, MA **ADV PG 103**
SPECTRON
Moorestown, NJ **ADV PG 75**
SYKES DATATRONICS
Rochester, NY **ADV PG 139**
TRT DATA PRODUCTS INC
NORFIELD COMM DIV
East Norwalk, CT **ADV PG 34**
WANG LABORATORIES INC
Lowell, MA **ADV PGS 105,106**
ABLE Computer
Irvine, CA
American Information Development
San Francisco, CA

American Used Computer Co
Boston, MA
AM Jacquard Systems
Santa Monica, CA
Applied Digital Data Systems Inc
Hauppauge, NY
Applied Systems Corp
St Claire Shores, MI
Associated Computer Consultants
Santa Barbara, CA
Basic Four Corp
Santa Ana, CA
Billings Computer Corporation
Provo, UT
Bolt Beranek & Newman Inc
Computer Systems Div
Cambridge, MA
Boston Financial & Equity Corp
Boston, MA
Burroughs Corp
Detroit, MI
C&W Incotel Ltd
New York, NY
Cado Systems Corp
Torrance, CA
California Computer Products Inc
Anaheim, CA
Cambridge Telecommunications
Burlington, MA
Complete Computer Systems
Horsham, PA
Computer Automation
Naked Mini Div
Irvine, CA
Computer Devices Inc
Burlington, MA
Conversational Systems Corp
New York, NY
Data Communications Corp
Memphis, TN
Data Dimensions Inc
Cos Cob, CT
Data General Corp
Westboro, MA
Data Stream
Brisbane, CA
Digital Equipment Corporation
Marlboro, MA
Digital Systems Corp
Walkersville, MD
Educational Data Systems
Irvine, CA
Electronic Interface Assoc Inc
New York, NY
First Computer Corp
Westmont, IL
Franklin Systems Corp
Westlake Village, CA
Gamma Technology Inc
Palo Alto, CA
Garyco Data Systems Inc
Seattle, WA
General Automation
Anaheim, CA
Glenayre Electronics
North Vancouver, BC
GTE Telenet Communications Corp
Vienna, VA
Hetra Computer & Communications
Industries Inc
Melbourne, FL
Hewlett-Packard Co
Palo Alto, CA
Honeywell Information Systems
Waltham, MA
Incoterm Corp
A Subsidiary of Honeywell Inc
Wellesley Hills, MA
Inforex Inc
Burlington, MA
Interactive Systems/3M
Ann Arbor, MI

Lantor Inc
Playa Del Rey, CA
Lockheed Electronics
Computer Syst Div
Plainfield, NJ
Logical Machine Corporation
Sunnyvale, CA
Modular Computer Systems
Fort Lauderdale, FL
MSI Data Corp
Costa Mesa, CA
MTI Sales Corp
Great Neck, NY
National Data Corp.
Atlanta, GA
National Semiconductor Corp
Santa Clara, CA
Paradyne Corp
Largo, FL
Periphonics Corp
Bohemia, NY
Perkin-Elmer
Oceanport, NJ
Plessey Fairfield
Div Plessey Inc
Fairfield, NJ
Plessey Peripheral Systems
Irvine, CA
Prime Computer Inc
Wellesley Hills, MA
Qantel Corporation
Hayward, CA
Quad Systems Inc
Rockville, MD
Raytheon Data Systems
Mansfield, MA
RCA Global Communications Inc
New York, NY
Rockwell-Collins
Dallas, TX
Sideral Corp
Portland, OR
Software Results Corp
Columbus, OH
Spectron
Moorestown, NJ
Sperry Univac
Blue Bell, PA
Sperry Univac, MCO
Irvine, CA
Sykes Datatronics
Rochester, NY
Tandem Computers
Cupertino, CA
Telefile Computer Prod Inc
Phoenix, AZ
Texas Instruments
Dig Sys Div
Houston, TX
Tri Data
Mountain View, CA
TRT Data Products Inc
Norfield Comm Div
East Norwalk, CT
TRW Communications Group
Los Angeles, CA
Tymnet Inc
Cupertino, CA
Wang Laboratories Inc
Lowell, MA
Wavetek Data Communications
San Diego, CA
Xycon Computer Systems
Arlington, WA

MODEM SHARING UNITS

CODEX CORPORATION
Mansfield, MA ADV PGS81-88
GANDALF DATA INC
Wheeling, IL ADV PG 51

INNOVATIVE ELECTRONICS INC
Miami Lakes, FL ADV PG 153
INTERTEL INC
Burlington, MA ADV PGS 63,89
KAPUSI LABORATORIES
San Mateo, CA ADV PG 77
PENRIL CORP
DATA COMMUNICATIONS DIV
Rockville, MD ADV PG 59
RACAL-VADIC INC
Sunnyvale, CA ADV PGS 54,55
RIXON INC
Silver Spring, MD ADV PG 53
SPECTRON
Moorestown, NJ ADV PG 75
TRAN TELECOMMUNICATIONS CORP
Marina Del Rey, CA ADV PG 97
TRT DATA PRODUCTS INC
NORFIELD COMM DIV
East Norwalk, CT ADV PG 34
UNIVERSAL DATA SYSTEMS INC
Huntsville, AL ADV PG Cover IV
Applied Delta Systems Inc
Bellmawr, NJ
Avanti Communications Corp
Newport, RI
Cambridge Telecommunications
Burlington, MA
Canoga Data Systems
Canoga Park, CA
Codex Corporation
Mansfield, MA
ComData Corp
Skokie, IL
Comten Inc
St Paul, MN
Data Stream
Brisbane, CA
Develcon Electronics Inc
Doylestown, PA
Digi-Log Systems Inc
Network Control Div
Horsham, PA
DMC Div
Cetec Corp
Santa Clara, CA
Electronic Interface Assoc Inc
New York, NY
Expandor Inc
Pittsburgh, PA
Gandalf Data Inc
Wheeling, IL
Hawaiian Telephone Co
Honolulu, HI
Inforex Inc
Burlington, MA
Innovative Electronics Inc
Miami Lakes, FL
International Data Sciences
Lincoln, RI
Intel Inc
Burlington, MA
Kapus Laboratories
San Mateo, CA
MTI Sales Corp
Great Neck, NY
Paradyne Corp
Largo, FL
Penril Corp
Data Communications Div
Rockville, MD
Polymorphic Systems
Santa Barbara, CA
Racal-Milgo
Miami, FL
Racal-Vadic Inc
Sunnyvale, CA
Raytheon Data Systems
Mansfield, MA
Rixon Inc
Silver Spring, MD

Spectron
Moorestown, NJ
Sperry Univac
Blue Bell, PA
Syntech Corp
Rockville, MD
Teleprocessing Products Inc
Simi Valley, CA
Tel-Tex Inc
Houston, TX
TRAN Telecommunications Corp
Marina Del Rey, CA
TRT Data Products Inc
Norfield Comm Div
East Norwalk, CT
United Data Services Co Inc
Phoenix, AZ
Universal Data Systems Inc
Huntsville, AL
Utec Corp
Clifton, NJ
Vardon & Associates
Irving, TX
Versitron Inc
Washington, DC
Via West
Phoenix, AZ

MULTIPLEXERS, FREQUENCY DIVISION

ARK ELECTRONIC PRODUCTS
Melbourne, FL **ADV PG 50**
GENERAL DATACOMM IND INC
Danbury, CT **ADV PGS 56,57**
PRENTICE CORP
Palo Alto, CA **ADV PG 60**
American Used Computer Co
Boston, MA
ARK Electronic Products
Melbourne, FL
Boston Financial & Equity Corp
Boston, MA
Coherent Communications
Central Islip, NY
ComData Corp
Skokie, IL
Data Dimensions Inc
Cos Cob, CT
Electronic Interface Assoc Inc
New York, NY
EMR Data Systems
Sarasota, FL
Farinon Electric
San Carlos, CA
General Datacomm Ind Inc
Danbury, CT
GTE Lenkurt Inc
San Carlos, CA
Hawaiian Telephone Co
Honolulu, HI
Interactive Systems/3M
Ann Arbor, MI
MTI Sales Corp
Great Neck, NY
NCR Corp
Dayton, OH
Prentice Corp
Palo Alto, CA
Pulsecom Div/Harvey Hubbell
Falls Church, VA
QEI Inc
Springfield, NJ
RCA Global Communications Inc
New York, NY
RFL Industries Inc
Boonton, NJ
South Central Bell Telephone Co
Birmingham, AL

MULTIPLEXERS, TIME DIVISION

CODEX CORPORATION
Mansfield, MA **ADV PGS 81-88**
DIGITAL COMMUNICATIONS CORP
Gaithersburg, MD **ADV PG 79**
GANDALF DATA INC
Wheeling, IL **ADV PG 51**
GENERAL DATACOMM IND INC
Danbury, CT **ADV PGS 56,57**
HALCYON
San Jose, CA **ADV PGS 92,93**
INFOTRON SYSTEMS CORPORATION
Cherry Hill, NJ **ADV PG 31**
INTERTEL INC
Burlington, MA **ADV PGS 63,69**
MICOM SYSTEMS INC
Chatsworth, CA **ADV PGS 32,33**
RIXON INC
Silver Spring, MD **ADV PG 53**
TRAN TELECOMMUNICATIONS CORP
Marina Del Rey, CA **ADV PG 97**
American Used Computer Co
Boston, MA
Applied Delta Systems Inc
Bellmawr, NJ
Boston Financial & Equity Corp
Boston, MA
Bowmar/Al Inc
Acton, MA
Canoga Data Systems
Canoga Park, CA
Codex Corporation
Mansfield, MA
ComData Corp
Skokie, IL
Data Dimensions Inc
Cos Cob, CT
Digital Communications Corp
Gaithersburg, MD
Electronic Interface Assoc Inc
New York, NY
EMR Data Systems
Sarasota, FL
Farinon Electric
San Carlos, CA
Gandalf Data Inc
Wheeling, IL
General Datacomm Ind Inc
Danbury, CT
Halcyon
San Jose, CA
Harris Corp
Controls Div
Melbourne, FL
Hawaiian Telephone Co
Honolulu, HI
Infotron Systems Corporation
Cherry Hill, NJ
Interactive Systems/3M
Ann Arbor, MI
Intertel Inc
Burlington, MA
Micom Systems Inc
Chatsworth, CA
Mini Computer Systems
Anaheim, CA
Plessey Fairfield
Div Plessey Inc
Fairfield, NJ
RCA Global Communications Inc
New York, NY
Rixon Inc
Silver Spring, MD
South Central Bell Telephone Co
Birmingham, AL
Stanford Telecommunications Inc
Sunnyvale, CA
Syntech Corp
Rockville, MD
Terracom
San Diego, CA

Timeplex Inc
Rochelle Park, NJ
TRAN Telecommunications Corp
Marina Del Rey, CA
TRW Vidar
Mountain View, CA
Versitron Inc
Washington, DC
Wavetek Data Communications
San Diego, CA

MULTIPLEXERS, INTELLIGENT

CODEX CORPORATION
Mansfield, MA **ADV PGS 81-88**
DIGITAL COMMUNICATIONS CORP
Gaithersburg, MD **ADV PG 79**
GANDALF DATA INC
Wheeling, IL **ADV PG 51**
GENERAL DATACOMM IND INC
Danbury, CT **ADV PGS 56,57**
GTE TELENET COMMUNICATIONS CORP
Vienna, VA **ADV PGS 18,19**
HALCYON
San Jose, CA **ADV PGS 92,93**
INFOTRON SYSTEMS CORPORATION
Cherry Hill, NJ **ADV PG 31**
MICOM SYSTEMS INC
Chatsworth, CA **ADV PGS 32,33**
PRENTICE CORP
Palo Alto, CA **ADV PG 60**
RIXON INC
Silver Spring, MD **ADV PG 53**
TRAN TELECOMMUNICATIONS CORP
Marina Del Rey, CA **ADV PG 97**
American Used Computer Co
Boston, MA
Applied Delta Systems Inc
Bellmawr, NJ
Applied Systems Corp
St Claire Shores, MI
Boston Financial & Equity Corp
Boston, MA
Cambridge Telecommunications
Burlington, MA
Codex Corporation
Mansfield, MA
ComData Corp
Skokie, IL
ComDesign Inc
Goleta, CA
Comten Inc
St Paul, MN
CSS Telecommunications
Mountain View, CA
Custom Terminals Corp
Hauppauge, NY
Data Flo
Hopkins, MN
Data Stream
Brisbane, CA
Digital Communications Assoc Inc
Norcross, GA
Digital Communications Corp
Gaithersburg, MD
Digital Systems Corp
Walkersville, MD
Dobson Woodbury Research Inc
Salt Lake City, UT
Electronic Interface Assoc Inc
New York, NY
Esterline Angus Instrument Corp
Indianapolis, IN

If you want to know what other products a company makes, turn to **Vendor Directory, page 301.**

Gandalf Data Inc
Wheeling, IL
General Automation
Anaheim, CA
General Datacomm Ind Inc
Danbury, CT
GTE Telenet Communications Corp
Vienna, VA
Halcyon
San Jose, CA
Hawaiian Telephone Co
Honolulu, HI
Infotron Systems Corporation
Cherry Hill, NJ
Intelligent Terminals Inc
Los Altos, CA
Interactive Systems/3M
Ann Arbor, MI
International Communications Sciences
Chatsworth, CA
Kaufman Research
Los Altos Hills, CA
Micom Systems Inc
Chatsworth, CA
Mini Computer Systems
Anaheim, CA
Minicomputer Systems
Elmsford, NY
National Semiconductor Corp
Santa Clara, CA
Paradyne Corp
Largo, FL
Perkin-Elmer
Oceanport, NJ
Phone 1 Inc
Rockford, IL
Plessey Fairfield
Div Plessey Inc
Fairfield, NJ
Prentice Corp
Palo Alto, CA
Quad Systems Inc
Rockville, MD
Racal-Milgo
Miami, FL
RCA Global Communications Inc
New York, NY
Rixon Inc
Silver Spring, MD
Teltone Corp
Kirkland, WA
Timeplex Inc
Rochelle Park, NJ
TRAN Telecommunications Corp
Marina Del Rey, CA

MULTIPLEXERS, GROUP BAND

CODEX CORPORATION
Mansfield, MA **ADV PGS 81-88**
GENERAL DATACOMM IND INC
Danbury, CT **ADV PGS 56,57**
MICOM SYSTEMS INC
Chatsworth, CA **ADV PGS 32,33**
TRAN TELECOMMUNICATIONS CORP
Marina Del Rey, CA **ADV PG 97**
American Used Computer Co
Boston, MA
Boston Financial & Equity Corp
Boston, MA
Codex Corporation
Mansfield, MA
General Datacomm Ind Inc
Danbury, CT
Micom Systems Inc
Chatsworth, CA
RCA Global Communications Inc
New York, NY
Timeplex Inc
Rochelle Park, NJ
TRAN Telecommunications Corp
Marina Del Rey, CA

PACKET PROCESSORS

DATA GENERAL CORP
Westboro, MA **ADV PGS 37,38**
DIGITAL COMMUNICATIONS CORP
Gaithersburg, MD **ADV PG 79**
GTE TELENET COMMUNICATIONS CORP
Vienna, VA **ADV PGS 18,19**
TRAN TELECOMMUNICATIONS CORP
Marina Del Rey, CA **ADV PG 97**
Associated Computer Consultants
Santa Barbara, CA
Billings Computer Corporation
Provo, UT
Bolt Beranek & Newman Inc
Computer Systems Div
Cambridge, MA
Cambridge Telecommunications
Burlington, MA
ComDesign Inc
Goleta, CA
Danray Div
Northern Telecom Inc
Richardson, TX
Data General Corp
Westboro, MA
Digital Communications Corp
Gaithersburg, MD
Gamma Technology Inc
Palo Alto, CA
GTE Telenet Communications Corp
Vienna, VA
Hawaiian Telephone Co
Honolulu, HI
Hetra Computer & Communications
Industries Inc
Melbourne, FL
Honeywell Information Systems
Waltham, MA
Intelligent Terminals Inc
Los Altos, CA
Kaufman Research
Los Altos Hills, CA
Magnuson Systems Corp
Santa Clara, CA
NCR Corp
Dayton, OH
Perkin-Elmer
Oceanport, NJ
Quad Systems Inc
Rockville, MD
Raytheon Data Systems
Mansfield, MA
Sideral Corp
Portland, OR
Timeplex Inc
Rochelle Park, NJ
TRAN Telecommunications Corp
Marina Del Rey, CA
Tymnet Inc
Cupertino, CA

PORT SELECTORS

ABLE COMPUTER
Irvine, CA **ADV PG 35**
ARK ELECTRONIC PRODUCTS
Melbourne, FL **ADV PG 50**
GANDALF DATA INC
Wheeling, IL **ADV PG 51**
INFOTRON SYSTEMS CORPORATION
Cherry Hill, NJ **ADV PG 31**
INNOVATIVE ELECTRONICS INC
Miami Lakes, FL **ADV PG 153**
MICOM SYSTEMS INC
Chatsworth, CA **ADV PGS 32,33**
TRAN TELECOMMUNICATIONS CORP
Marina Del Rey, CA **ADV PG 97**

TRT DATA PRODUCTS INC
NORFIELD COMM DIV
East Norwalk, CT **ADV PG 34**
ABLE COMPUTER
Irvine, CA
Applied Delta Systems Inc
Bellmawr, NJ
ARK Electronic Products
Melbourne, FL
Cambridge Telecommunications
Burlington, MA
Custom Terminals Corp
Hauppauge, NY
Develcon Electronics Inc
Doylestown, PA
Digital Communications Assoc Inc
Norcross, GA
Electronic Interface Assoc Inc
New York, NY
Gandalf Data Inc
Wheeling, IL
Infotron Systems Corporation
Cherry Hill, NJ
Innovative Electronics Inc
Miami Lakes, FL
Livermore Data Systems Inc
Livermore, CA
Micom Systems Inc
Chatsworth, CA
Teleprocessing Products Inc
Simi Valley, CA
TRAN Telecommunications Corp
Marina Del Rey, CA
TRT Data Products Inc
Norfield Comm Div
East Norwalk, CT
Via West
Phoenix, AZ

PORT SHARING UNITS

CODEX CORPORATION
Mansfield, MA **ADV PGS 81-88**
GANDALF DATA INC
Wheeling, IL **ADV PG 51**
INNOVATIVE ELECTRONICS INC
Miami Lakes, FL **ADV PG 153**
INTELTEL INC
Burlington, MA **ADV PGS 63,69**
MICOM SYSTEMS INC
Chatsworth, CA **ADV PGS 32,33**
PENRIL CORP
DATA COMMUNICATIONS DIV
Rockville, MD **ADV PG 59**
SPECTRON
Moorestown, NJ **ADV PG 75**
TRAN TELECOMMUNICATIONS CORP
Marina Del Rey, CA **ADV PG 97**
TRT DATA PRODUCTS INC
NORFIELD COMM DIV
East Norwalk, CT **ADV PG 34**
Applied Delta Systems Inc
Bellmawr, NJ
Cambridge Telecommunications
Burlington, MA
Codex Corporation
Mansfield, MA
Custom Terminals Corp
Hauppauge, NY
Develcon Electronics Inc
Doylestown, PA
Electronic Interface Assoc Inc
New York, NY
Expander Inc
Pittsburgh, PA

For further catalog information, turn to **UpDate Service Card, page 201.**

Gandalf Data Inc
Wheeling, IL
Hands-On Terminals Inc
Portland, OR
Hawaiian Telephone Co
Honolulu, HI
Inforex Inc
Burlington, MA
Innovative Electronics Inc
Miami Lakes, FL
International Data Sciences
Lincoln, RI
Intertel Inc
Burlington, MA
Micom Systems Inc
Chatsworth, CA
Paradyne Corp
Largo, FL
Penril Corp
Data Communications Div
Rockville, MD
Pulsecom Div/Harvey Hubbell
Falls Church, VA
RCA Global Communications Inc
New York, NY
Sideral Corp
Portland, OR
Spectron
Moorestown, NJ
Teleprocessing Products Inc
Simi Valley, CA
TRAN Telecommunications Corp
Marina Del Rey, CA
TRT Data Products Inc
Norfield Comm Div
East Norwalk, CT
United Data Services Co Inc
Phoenix, AZ
Vardon & Associates
Irving, TX
Versitron Inc
Washington, DC
Via West
Phoenix, AZ

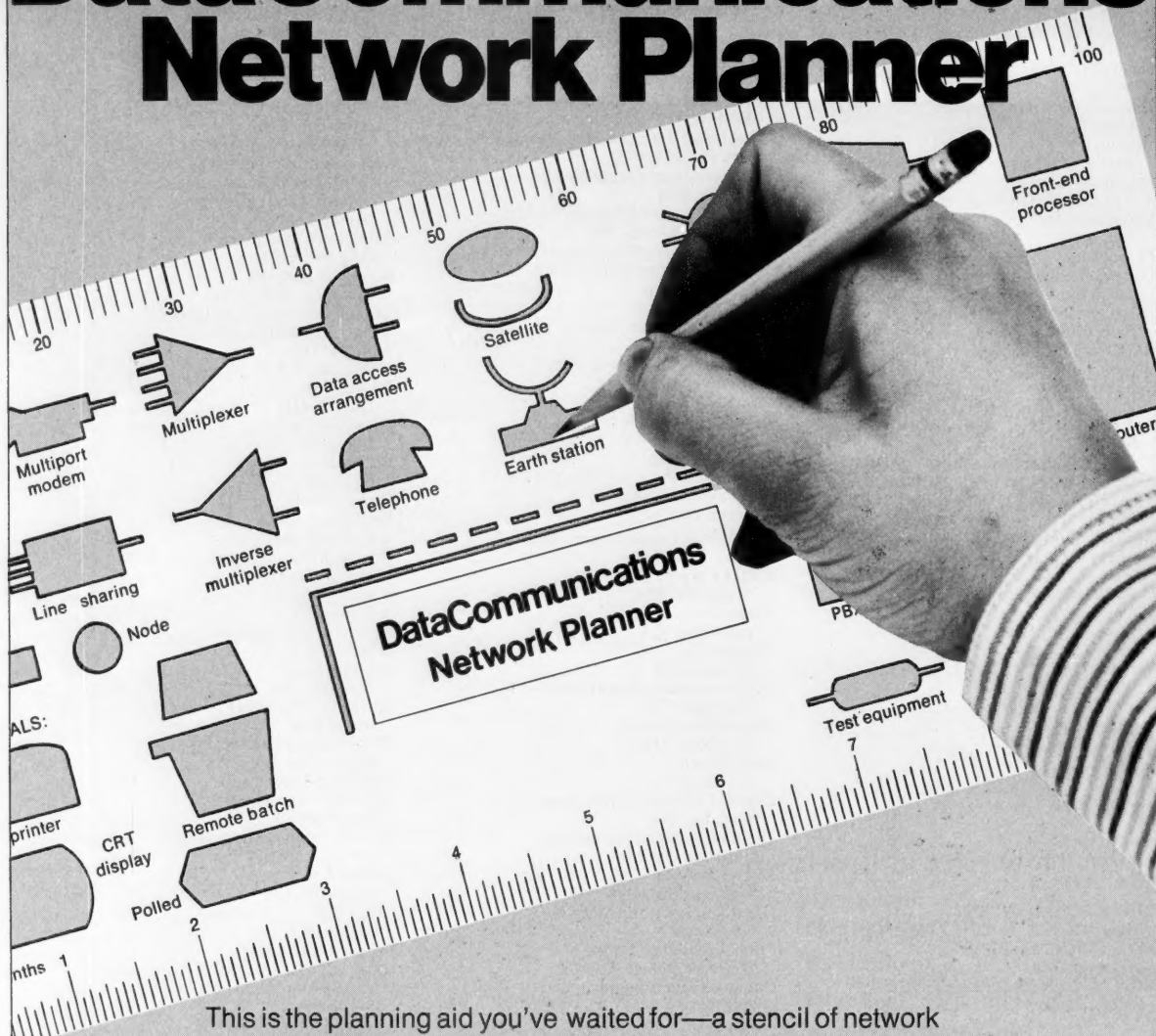
REMOTE NETWORK PROCESSORS

CODEx CORPORATION
Mansfield, MA **ADV PGS 81-88**
DATA GENERAL CORP
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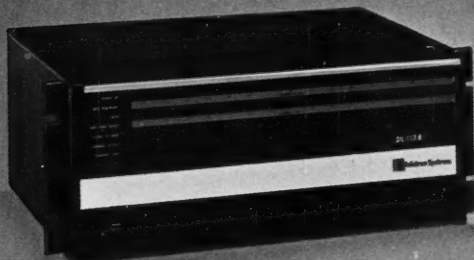


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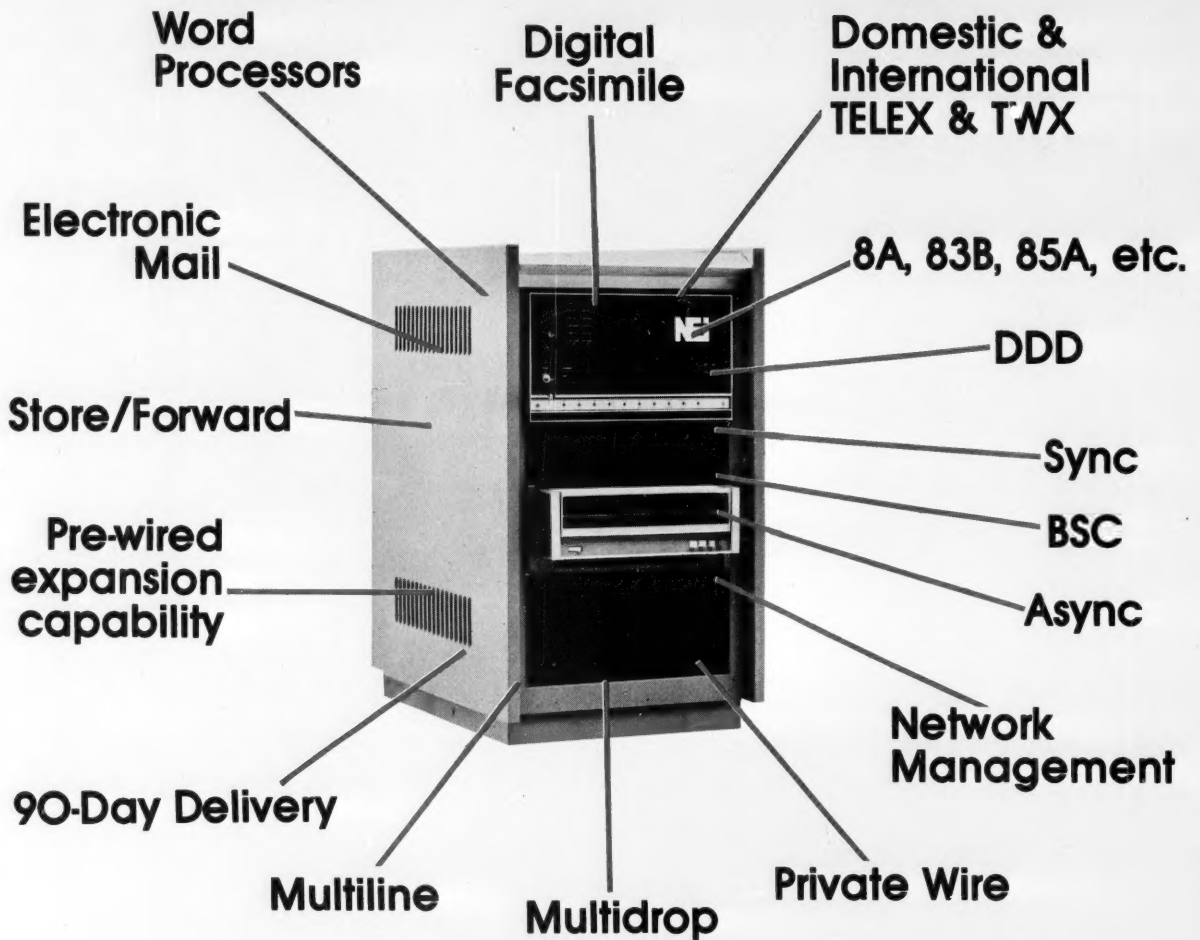
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An important tip for PDP-11 users

Play the blue-chip cards from Able.

COMMUNICATIONS PRODUCTS

DMAX/16" (16-LINE DH11 REPLACEMENT)

INSTALLS IN: All PDP-11's; in less than one half the space of DH11. **DATA RATES:** All 14 standard baud rates plus 19.2K baud and one user programmable data rate (16 baud rates). **PROCESSING ADVANTAGES:** Word transfers (in lieu of byte DMA) cut processing overhead by half! **OPERATING MODES:** Full or half duplex with full modem control via DM/16 option. **CAPACITY:** Up to 256 lines on a single PDP-11.

QUADRASYNC/B" (4-LINE DL11 REPLACEMENT/EIA)

INSTALLS IN: All PDP-11's; 4-lines per SPC slot at one unit load to Unibus. **DATA RATES:** 7 independently selectable baud rates for each of 4 channels (150-9600). **ELECTRICAL:** EIA standard RS232C (Modem control not supported). **VECTOR/ADDRESS SELECTION:** Vector and address values to be set on boundaries of 00s or 40s. 16 continuous word address for Vector or Address.

QUADRASYNC/C" (4-LINE DL11 REPLACEMENT/CL)

INSTALLS IN: All PDP-11's; 4-lines per SPC slot at one unit load to Unibus. **DATA RATES:** 7 independently selectable baud rates for each of 4 channels (150-9600). **ELECTRICAL:** 20MA current loop (Send : Receive). **VECTOR/ADDRESS SELECTION:** Vector and address values to be set on boundaries of 00s or 40s. 16 continuous word address for Vector or Address.

QUADRASYNC/E" (4-LINE DL11-E REPLACEMENT)

INSTALLS IN: All PDP-11's; 4-lines per SPC slot at one unit load to Unibus. **DATA RATES:** 7 independently selectable baud rates for each of 4 channels (150-9600). **ELECTRICAL:** EIA standard RS232C - with modem control. **VECTOR/ADDRESS SELECTION:** 16 continuous word address for Vector or Address - starting values selected on any boundary.

QUADRASYNC/LSI" (4-LINE DLV11 REPLACEMENT)

INSTALLS IN: LSI-11 and PDP-11/03; 4-lines/card at one unit load to Unibus. **DATA RATES:** 8 independently selectable baud rates for each of 4-channels (110-9600). **ELECTRICAL:** 20MA active/passive current loop (Send : Receive) - also supports EIA standard RS232C. **VECTOR/ADDRESS SELECTION:** Like DLV-11 - 3-channels must have contiguous addresses and 1-channel may be set to any address including console address.

QUADRACALL" (4-LINE DN11 REPLACEMENT)

INSTALLS IN: All PDP-11's; 4-lines per SPC slot at one unit load to Unibus. **PERFORMANCE:** Interfaces up to 4 Bell 801 ACU's with Unibus enabling any PDP-11 to dial any DDD network number to establish data link. **INPUT/OUTPUT:** 5-input signals from ACU are handled by EIA RS232C receivers. 6-output signals are transmitted using EIA RS232C drivers. **VECTOR/ADDRESS SELECTION:** Allows selection of device address and vector by use of pencil switches.

DV/16 (16-LINE DV11 REPLACEMENT)

INSTALLS IN: All PDP-11's; in less than one half the space of DV11. **DATA RATES:** 16-line throughput of up to 76,800 char/sec (19.2K baud full duplex for each line) total. **PROCESSING ADVANTAGE:** Word transfers (in lieu of byte DMA) permit user to operate within one half the DV11 bandwidth for data transfers. **OPERATING ADVANTAGE:** User may mix sync and async lines in combinations of 4 or 8 lines with modem control and full system software compatibility with all DV11 performance features.

MEMORY PRODUCTS

SCAT/45" (ADD-IN FASTBUS MEMORY)

INSTALLS IN: PDP-11/45, -11/50 and -11/55. **EXPANDS IN:** 32K word increments/board. One-half of the available Fastbus space will accept full 124K word complement. **ADDRESSES ON:** Any 4096 word boundary across entire 124K word range. User has full memory complement at 330 nsec cycle-time memory instead of 32K word limitation imposed by the computer manufacturer.

CACHE/45" (CACHE BUFFER MEMORY)

INSTALLS IN: PDP-11/45, -11/50 and -11/55. **CAPACITY:** 2048 byte (1K word). **ENHANCEMENT FACTOR:** Run time reductions to 50% (100% speed improvement) are achievable. **CACHE PARITY:** Automatically goes off-line in event of any data error. **RANGE SELECTION:** User may optimize hit ratio by upper/lower limit switch settings. **SPECIAL FEATURE:** Cache/45 can be enabled via software or console switches.

CACHE/434" (4K WORD CACHE MEMORY)

INSTALLS IN: PDP-11/34 and -11/34A without using any additional backplane space! **CAPACITY:** 8192 byte (4K word). **ENHANCEMENT FACTOR:** Run time reductions to 40% (70% speed improvement) are achievable. **CACHE PARITY:** Automatically goes off-line in event of any data or address error. **RANGE SELECTION:** User may optimize hit ratio by upper/lower limit switch settings. Cache action monitor indicates hit rate.

CACHE/440" (4K WORD CACHE MEMORY)

INSTALLS IN: PDP-11/35 and -11/40 without using any additional backplane space! **CAPACITY:** 8192 byte (4K word). **ENHANCEMENT FACTOR:** Run time reductions to 40% (70% speed improvement) are achievable. **CACHE PARITY:** Automatically goes off-line in event of any data or address error. **RANGE SELECTION:** User may optimize hit ratio by upper/lower limit switch settings. Cache action monitor indicates hit rate.

EMULOADER" (ODT/BOOTSTRAP LOADER REPLACEMENT)

INSTALLS IN: PDP-11/05, -11/10, -11/35, -11/40, -11/45, -11/50 and -11/55. **MECHANICAL:** Dual width card replaces standard Unibus termination; requires no additional backplane space. **OPERATING ADVANTAGE:** Provides fixed console emulator (ODT) and bootstrap loaders for DL11, PC11, RF11, RK06, RK11, RP04/05/06, RP11, RS03/04, RX11, TC-11, TM11 and TU16. **SPECIAL FEATURE:** Performs memory diagnostic each time a boot operation is done from ODT.

GENERAL PURPOSE PRODUCTS

QNIVERTER" (Q-BUS TO UNIBUS CONVERTER OR UNIBUS TO Q-BUS CONVERTER)

INSTALLS IN: LSI-11, LSI-11/23, PDP-11/03 and PDP-11/23 via quad-width card. **APPLICATIONS:** Allows Unibus-compatible controllers and memories to be used with LSI computer systems, or LSI-based peripherals to be used with PDP-11 computer systems. **FEATURES:** Supports features of LSI-11/23 including the full 128K address capability.

REBUS" (BUS REPEATER - DB11 REPLACEMENT)

INSTALLS IN: All PDP-11's; without using any additional backplane space. **MECHANICAL:** One dual-width card plugs into the same pair of connectors as the Unibus extension cable which is then plugged into the REBUS connectors. **COMPATIBILITY:** Allows for 18 additional bus loads and 50 foot bus extension. Requires no software changes. Bus cycle time unaffected for devices on CPU side of REBUS - increased by 250 nsec max. for devices on outboard side.

DUAL I/O" (GENERAL INTERFACE DR11-C REPLACEMENT)

INSTALLS IN: All PDP-11's; in any SPC slot via quad-width card. **APPLICATION:** Dual I/O is equivalent to two (2) DR11-C's and provides the logic for program-controlled parallel transfer of 16-bit data between two (2) external user devices and a Unibus system. **OPERATING ADVANTAGE:** Provides user the hardware/software equal to a dual DR11-C in one-half the space and one-half the bus loading of DR11-C's.

UNIFACE" (UNIBUS-COMPATIBLE, GENERAL-PURPOSE IOP)

INSTALLS IN: All PDP-11's in any SPC slot via hex-width card. **APPLICATION(S):** Limited only by user's ingenuity: can form additional intelligent Unibus I/O channel(s), communications pre-processor(s), efficient KMC11 equivalent(s), or user-proprietary device(s). **OPERATING ADVANTAGE:** To PDP-11's, UNIFACE looks like a standard controller at one bus load; to devices served, UNIFACE acts as a powerful CPU.

BUSLINK/UNI, LSI OR U TO Q (CPU TO CPU LINK: UNIBUS TO UNIBUS, UNIBUS TO Q-BUS OR Q-BUS TO Q-BUS)

INSTALLS IN: All PDP-11's and/or LSI-11's via pairs of hex-width, hex/quad-width, or quad-width cards and supplied cables. **APPLICATION:** Provides full DA11-B (Unibus or Q-bus link) compatibility on single cards. BUSLINK operates at DA11-B transfer rates over distances of up to 50 feet. **OPERATING ADVANTAGE:** Requires only one card per CPU to effect link at minimal bus loading vs. full system unit per computer.

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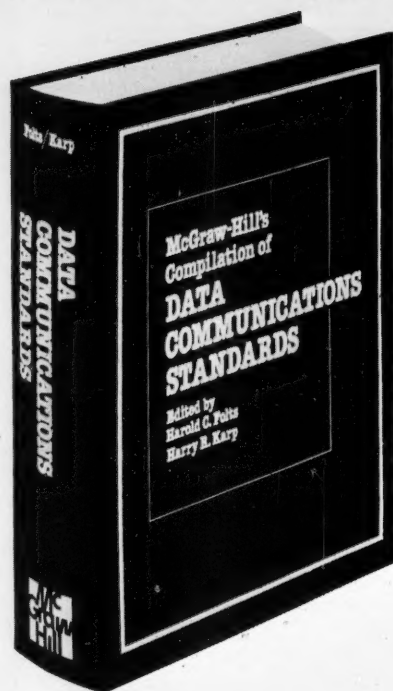
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FEATURES

- Emulates IBM 3270 Information Display Systems
- Provides distributed processing capability using the Idea (Interactive data entry/access) language interface
- Allows interactive distributed processing for local and remote data bases
- Uses AOS Spooler with operator queue management
- Connects up to 16 local or remote terminals
- Operates at speeds up to 9600 bps on leased synchronous lines
- Runs on Data General ECLIPSE® computers under Data General's Advanced Operating System (AOS)
- Includes error checking with hardware CRC support
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- Supported by Data Control Unit (DCU/200)
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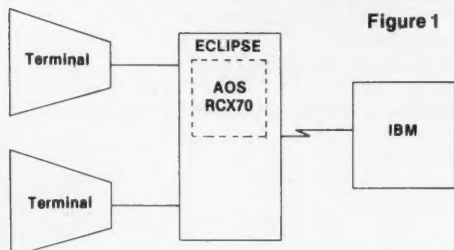
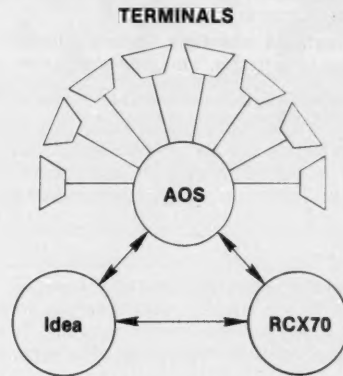
DESCRIPTION

Data General's AOS RCX70 (Remote Cluster 70), an IBM 3270 Information Display System emulator, lets Data General ECLIPSE computers operating under the Data General Advanced Operating System (AOS) execute interactive tasks and communicate with IBM 360/370 systems. In addition, AOS RCX70 supports most IBM 3270 screen commands for reading and writing. And AOS Idea applications can process data base requests locally and/or use AOS RCX70 to send requests to a host IBM system.

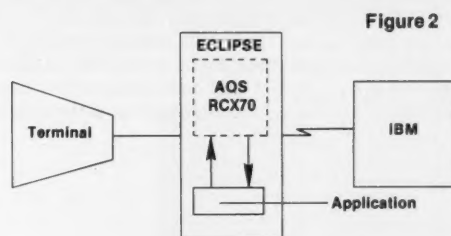
AOS RCX70 uses the industry-standard IBM Binary Synchronous Protocol (BSC) that lets users access programs and data

bases on local Data General processors or remote IBM 360/370 processors.

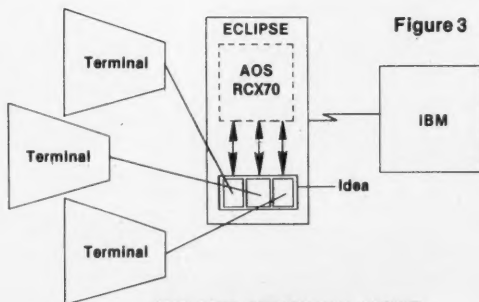
An AOS RCX70 ECLIPSE system can operate in four modes: Mode 1-RCX70 terminals communicating to an IBM 360/370 application via an ECLIPSE computer (figure 1). Mode 2 - an RCX70 terminal communicating to an IBM 360/370 application via an ECLIPSE computer with local AOS application processing (figure 2). Mode 3 - Idea terminals communicating to an IBM 360/370 application via an ECLIPSE computer (figure 3). Mode 4 - an RCX70 terminal communicating with an ECLIPSE AOS application (figure 4).



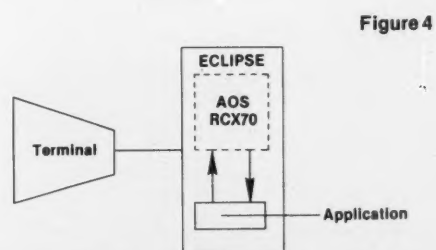
IBM 3270 EMULATOR MODE



DISTRIBUTED PROCESSING MODE



IBM 3270 PROTOCOL MODE



LOCAL PROCESSING MODE

SOFTWARE SUPPORT

AOS RCX70 runs under Data General's Advanced Operating System (AOS), which provides the intelligent, multiprogramming features of large-computer operating systems on the powerful ECLIPSE line. AOS concurrently supports time-sharing, multiple batch streams and online processing for production and/or program development.

AOS RCX70 interfaces with Data General's Idea (Interactive data entry/access) software. Idea operates under AOS with

the INFOS® data-base-oriented file management system. The integration of Idea and INFOS lets users easily access sophisticated file management capabilities.

Additionally, AOS supports other Data General high-level languages including COBOL, RPG II, PL/I, FORTRAN IV, FORTRAN 5, Extended BASIC and Data General's system programming language (DG/L) as well as a sophisticated Macro Assembler.

TERMINAL SUPPORT

AOS system terminals can perform multiple functions. They can be used as program-development, application-oriented or RCX70 terminals. And a terminal's function can be dynamically

changed. Up to 16 local or remote Data General displays can be concurrently assigned to AOS RCX70.

AOS SPOOLING

The AOS Spooler ensures that multiple AOS RCX70 users sending output to line printers receive service in an orderly manner. The Spooler provides forms controls, flush, restart and header/trailer controls capabilities. The spooling mech-

anism diverts output to temporary disc files. Each spooled file is assigned to a queue designated to a particular printer. As printers become available, spooled files are taken from the queues and printed.

ERROR DETECTION

AOS RCX70 ECLIPSE systems ensure accurate data transfers by checking data as it is transmitted and received. The transmitting system adds a block check character calculated by a Cyclic Redundancy Check (CRC) polynomial. The system receiving the data uses the same algorithm to generate its own

check character and compares it to the original. If the two are different, the receiving system automatically requests retransmission of the data. With AOS RCX70, the error detection and retransmission functions are performed by the basic synchronous line support integrated into AOS.

LINE SUPPORT

With AOS RCX70, local and remote computers can communicate at speeds up to 9600 bps, using leased lines. They use the

Binary Synchronous Protocol (BCS) handled by the AOS synchronous line driver.

HARDWARE CONFIGURATION

The minimum hardware requirement for an AOS RCX70 configuration is a Data General ECLIPSE computer licensed to run under AOS with at least 256K bytes of memory, a 6052 or 6053 DASHER display, a Model 4251 communications chassis and a Model 4263 or 4264 SLM-2 Synchronous Line Multiplexor,

and one Model 4266 CRC generator/checker to handle all SLM lines on the system. A Data General Data Control Unit (DCU/200) can be added for high-speed lines or to offload communications processing from the ECLIPSE system. On lower line speed systems, a Model 4242 ULM-5 may be configured.

The materials contained herein are summary in nature, subject to change, and intended for general information only. Details and specifications concerning the use and operation of Data General

equipment and software are available in the applicable technical manuals, available through local sales representatives.



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Data Transmission Equipment

The keystone of data communications equipment—the modem—has been the recipient of some technological advances recently. These advances have made full-duplex operation possible on half-duplex links and have resulted in new modem capabilities such as enhanced line equalization.

Most data communications pundits would unhesitatingly say that full-duplex (FDX) communications via a single two-wire dial-network connection at 4.8 kbit/s is impossible. They would also proclaim that full-duplex 1.2-kbit/s transmission via Bell 202-compatible acoustic couplers is likewise impossible. Both of these statements are true, but only if one takes an unrealistically narrow view of the term full-duplex.

These statements are certainly not true when the definition of full-duplex used by a majority of terminal and computer manufacturers is examined in detail. A reexamination of the terms full-duplex and half-duplex (HDX) from the terminal point of view has led to the development of techniques and devices that make it

possible to upgrade 300-bit/s, acoustically coupled access to 1.2 kbit/s, and 103- or 212-modem-connected configurations to 2.4 or 4.8 kbit/s.

A clearer understanding of full- and half-duplex protocols allows these new methods to be applied to both asynchronous and synchronous terminals, and to shift leased-line terminals to the switched network. Or a four-wire leased-line network may be expanded by using one or more dial-up connections to contact less active remote terminals without changing front-end hardware or software.

It is not unusual for a full-duplex device to be used in a half-duplex mode. For example, the common four-wire leased line is an inherently full-duplex facility because the receive pair of wires and the transmit pair of wires are quite independent of each other and can be used simultaneously. But suppose a user employs a four-wire leased line in such a way that he never sends over it until he has stopped receiving. In this case, he is using a full-duplex facility in a half-duplex manner, and

it is the terminal or computer that determines whether transmission is either half- or full-duplex.

Two-wire lines are inherently half-duplex. However, they may be made to appear full-duplex by using frequency-division multiplexing techniques. Essentially, the available 300- to 3K-Hz bandwidth of a dial-up phone line is split into two parts: one to transmit and the other to receive. A modem is used that can receive on one frequency band while transmitting on the other. Thus, in this case, it is the modem that determines whether the transmission can be FDX, and the terminal or computer whether it actually is.

The first truly full-duplex 1.2-kbit/s modem was the Vadic 3400 unit, which uses differential-phase-shift-keying (DPSK) modulation. This modulation technique is widely employed in 2.4- and 4.8-kbit/s modems, and produces a narrow-band carrier signal by using multi-level encoding techniques.

DPSK is a synchronous modulation process. Therefore, the Vadic full-duplex modem is essentially two synchronous modems operating in two different frequency bands. The Vadic 3400 that originates a call transmits a carrier frequency of 2.25 kHz and receives a carrier frequency of 1.15 kHz. The answering modem receives at 2.25 kHz and transmits at 1.15 kHz.

The Bell 212A and its equivalents from General Datacomm (GDC), Penril, Rixon, and Racal-Vadic, as well as the UDS 12-12, also use narrow-band DPSK modulation, but with carrier frequencies of 1.2 and 2.4 kHz. However, in these modems, the end originating the call sends at the low carrier frequency.

Higher is better

Thus, the Vadic technique is better suited to acoustic coupling because harmonic distortion in the microphone at the originating end will not continue through the phone network. Even the second harmonic at 4.5 kHz is high enough to be out of band. Indeed, Anderson Jacobson and Racal-Vadic have jointly developed, and offer, such an acoustically coupled modem.

If it were ever felt that two-wire FDX at 1.2 kbit/s had

stretched information theory to its limits, Codex corrected this impression when it announced a two-wire, full-duplex 2.4-kbit/s modem, which on good lines can be pushed to 3.2 kbit/s. The Codex LSI 24/24 uses quadrature amplitude modulation (QAM) and adaptive equalization and can handle either synchronous or asynchronous data. Although the modem represents a technical tour de force, its cost (\$4,000 to \$5,000, compared with the \$400 cost of a Bell 103) may limit its applicability. Also, no acoustic coupler is anticipated.

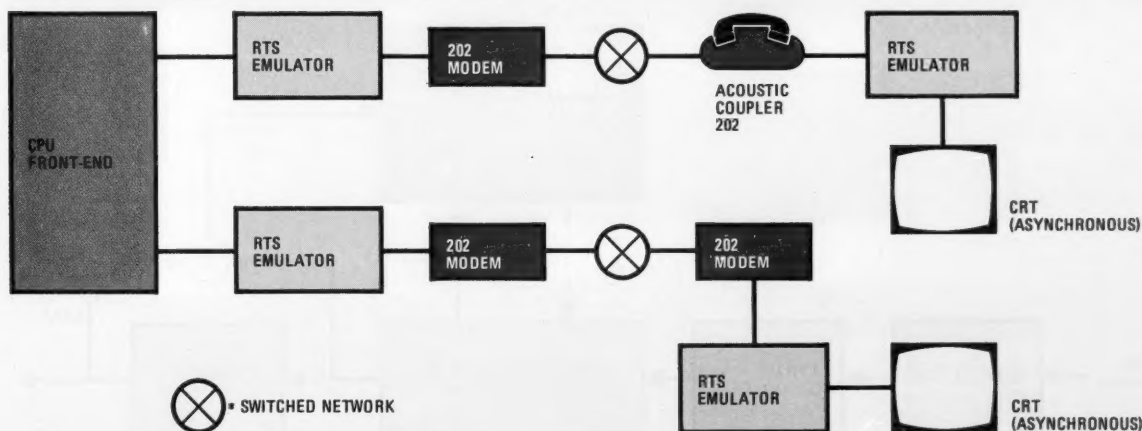
The various full-duplex, two-wire modems do a fine job. However, even with 103s or 212s, the transmission is still going to be half-duplex if either the terminal or the computer does not send and receive at the same time. Although difficult to estimate exactly, probably more than 75 percent of the CRT terminals, teletype-writers, and printers—as well as computer input and output ports—operate half duplex, even if they are connected to full-duplex modems and four-wire telephone lines.

On a half-duplex facility, the modem controls the direction of transmission, and it must be told by the computer and the terminal when to send and when to receive. The EIA RS-232-C control signal REQUEST TO SEND (RTS) is used for this purpose. Thus, what prevents dumb terminals from operating in their inherent HDX mode, and what really forces them to use FDX modems, is these terminals' inability to send RTS when they need to transmit, and to drop it when they wish to receive. In a similar vein, they also cannot recognize and wait for CLEAR TO SEND (CTS) before transmitting.

The "standard" HDX modem is the Bell 202, the workhorse of 1.2-kbit/s transmission for many years. It is considered inexpensive—at a cost of about \$500—and dependable when acoustically coupled. Therefore, trying to extend its usefulness by adding line-turnaround intelligence is a logical step.

The 202 is available with a reverse-channel (subcarrier) option, which can be used to remotely turn RTS on and off. In this case, it is assumed that a smart comput-

1 Full-duplex at 1.2 kbit/s



considered something of a "black art" by many in the industry. This is due to the wide range of engineering disciplines involved in the design and implementation of these complex digital devices, and also to the relatively small number of industries directly involved in their manufacture.

Equalizer hardware has followed the general trend in digital electronics from small- to large-scale integration, and then to microprocessor control. The basic operations of equalization—which involve many iterations of the same shift-multiply-add sequence—make equalizers amenable to custom LSI implementation under software control. Today, equalization is widely employed over telephone lines at data rates of 4.8 and 9.6 kbit/s.

Adaptive equalization

The definition of an adaptive digital equalizer involves (1) the selection of a performance criterion (or cost function), (2) an algorithm for minimizing this cost function, and (3) a means for implementing the algorithm. The resulting system should be stable, reliable, and cost effective. It also should first allow for fast initialization and then on-line tracking of variations in the channel and data statistics. Figure 2 is a block diagram of a typical equalizer based on a transversal digital filter. The algorithm uses the error sample $e(n)$ to adjust the filter tap coefficients in order to reduce the cost function iteratively. A decision algorithm estimates the data sample from the equalizer output.

During initialization, a known sequence of training pulses is transmitted. It may consist of either isolated pulses with enough time between each for the channel response to decay, or of some sequence with desirable spectral properties. Once synchronization is acquired, the equalizer output is compared with a locally generated replica of this initializing sequence to produce the error sample at the receiver. Over many iterations, the algorithm adjusts the tap coefficients until the optimal tap setting is obtained. At this point, the equalizer output should closely approximate the training

For a modem to perform at its best, it needs an electrically ideal telephone line over which to send data. The trend has been for the modem itself to compensate for the inconsistencies of the telephone line and its associated devices. This compensation function is called line equalization.

Although automatic equalization has now been used in data communications for about 15 years, it is still

The diagram illustrates a digital signal processing system for a transversal filter with adjustable taps. The main processing path consists of four blocks in series: 'FROM CHANNEL' (input), 'DEMODULATOR', 'A TO D CONVERTER', and 'TRANSVERSAL FILTER WITH ADJUSTABLE TAPS'. The output of the transversal filter is fed into a 'DECISION ALGORITHM' block, which produces the final 'DATA' output. A feedback loop for tap adjustment is also shown. The 'TRANSVERSAL FILTER WITH ADJUSTABLE TAPS' block receives 'TAP ADJUSTMENTS' from an 'ALGORITHM FOR ADJUSTING TAPS TO MINIMIZE COST FUNCTION' block. The 'TRANSVERSAL FILTER WITH ADJUSTABLE TAPS' also provides an 'EQUALIZER STATE' to the same algorithm block. The 'DECISION ALGORITHM' block outputs an 'ERROR $e(n)$ ' signal to the algorithm block. Additionally, a 'TRAINING SEQUENCE GENERATOR' block provides an 'INITIALIZE' signal to a summing junction (represented by a circle with a Σ symbol). The summing junction also receives a signal from the 'TRANSVERSAL FILTER WITH ADJUSTABLE TAPS' (labeled with a '+') and outputs the 'ERROR $e(n)$ ' signal (labeled with a '-') to the algorithm block.

sequence, and $e(n)$ should be very small. The coefficients will be initialized so that the unit pulse response samples of the combined channel and equalizer have minimal distortion. After initialization is completed, the coefficients may be fixed. This is the automatic equalization function.

If the time of transmission is long enough for the channel to vary, or if the data statistics change significantly, the initial equalizer setting is no longer optimal. It is then desirable for the equalizer coefficients to slowly track these changes, in which case the equalizer is made adaptive.

Recent developments

Besides the two-wire, full-duplex modem developments described earlier, other data transmission news has been recently made.

Applying its LSI circuit technology to the needs of data communications users, Rockwell International Corp. is entering the standard, off-the-shelf modem business with a family of modular units. Their compact size allows them to be built into terminals and other data communications equipment.

Two of the three modules measure 2.75-by-2.75-by-0.5 inches; the third module, 2.75-by-3.5-by-0.5 inches. The modem set requires a maximum power of 3 watts. Employing differential-phase-shift-key modulation, it synchronously transmits at 2.4 kbit/s, but has a fall-back speed of 1.2 kbit/s.

The standard R24 modem has a fixed compromise equalizer in its receiver, designed to adjust for most common variations in telephone line signals.

In addition, fiber optics has invaded the modem field. Canoga Data Systems has been quietly marketing the first commercially available, fully synchronous fiber optic modem. Called the CSY-100-S fiber optic

synchronous digital data link, the modem operates in a full-duplex mode at all speeds up to 56 kbit/s. CSY-100-S has been designed to be plug compatible with synchronous RS-232-C standard data processing and terminal equipment. Optical conversion of the digital data is automatic. Serial data may be transferred over a distance of 3,000 feet (1 km), with a typical operational bit error rate of 10^{-9} or better.

A built-in monitoring feature of CSY-100-S continuously checks that the modem is operational, as well as testing the connecting optical cable's integrity. A visual indicator provides the operator with information on the complete link. Full RS-232-C operational protocol is transmitted through the link for a conversational handshaking operation. ■

For more on data transmission equipment see the following Data Communications articles:

1. "Modems Are Capable Machines, but Where Are They Going?" Glenn Hartwig, February 1978, p. 57. The big push—now and for the near-term future—is to make modems smaller, integrate them with data communications equipment, and at the same time give them vastly greater capabilities in the areas of diagnostics through microprocessor technology.
2. "Understanding the Fundamentals of Line Equalization," William J. Barksdale, May 1979, p. 107. Here is an introduction to equalization at a level that is suitable for the increasing number of technical management personnel involved in networking.
3. "The Full-Duplex, 2-Wire Story—Pick Your Modem," Ralph Glasgal, June 1979, p. 77. Although frequency-splitting techniques enable full-duplex operation over half-duplex lines, there are less expensive ways to get line-turnaround intelligence. Here are some of those methods.

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New York, NY
Cincinnati Bell
Cincinnati, OH
C & L Terminals Inc
Portland, OR
Codex Corporation
Mansfield, MA
ComData Corp
Skokie, IL
Continental Resources Inc
Bedford, MA
DEI-Teleproducts
Escondido, CA
Digital Communications Corp
Gaithersburg, MD
Electronic Interface Assoc Inc
New York, NY
E-Systems Inc
Garland Div
Garland, TX
Gandalf Data Inc
Wheeling, IL
General Datacomm Ind Inc
Danbury, CT
General Telephone Co of California
Santa Monica, CA
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co. of the Southwest
San Angelo, TX
Glenayre Electronics
North Vancouver, BC
Hawaiian Telephone Co
Honolulu, HI
Interactive Systems/3M
Ann Arbor, MI
Intertel Inc
Burlington, MA
Livermore Data Systems Inc
Livermore, CA
MTI Sales Corp
Great Neck, NY
Nuclear Engineering Services Co
Sunnyvale, CA
Penril Corp
Data Communications Div
Rockville, MD
Racal-Milgo
Miami, FL
Racal-Vadic Inc
Sunnyvale, CA
RCA Global Communications Inc
New York, NY
Rixon Inc
Silver Spring, MD
Sperry Univac
Blue Bell, PA
Syntech Corp
Rockville, MD
Tek-Com
San Jose, CA
Terminal Specialties Inc
Salt Lake City, UT
Timeplex Inc
Rochelle Park, NJ
Universal Data Systems Inc
Huntsville, AL
Vardon & Associates
Irving, TX
Wavetek Data Communications
San Diego, CA

MODEMS, VOICE-GRADE — LOW-SPEED (0-1,200 B/S)

ALANTHUS DATA COMMUNICATIONS CORP

Rockville, MD ADV PG 134

ANDERSON JACOBSON

San Jose, CA ADV PG 140

ASTROCOM CORP

St Paul, MN ADV PG 52

CODEX CORPORATION

Mansfield, MA ADV PGS 81-88

DATA ACCESS SYSTEMS INC

Mountain Lakes, NJ ADV PG 141

GANDALF DATA INC

Wheeling, IL ADV PG 51

GENERAL DATACOMM IND INC

Danbury, CT ADV PGS 56,57

GENERAL ELECTRIC —

INSTRUMENTATION &

COMMUNICATIONS EQUIP SERVICE

Schenectady, NY ADV PGS 163,165

INFOTRON SYSTEMS CORPORATION

Cherry Hill, NJ ADV PG 31

INTERTEL INC

Burlington, MA ADV PGS 63,69

MULTI-TECH SYSTEMS INC

New Brighton, MN ADV PGS 64,80

NOVATION INC

Tarzana, CA ADV PG 61

OMNITEC DATA

Phoenix, AZ ADV PG 62

PENRIL CORP

DATA COMMUNICATIONS DIV

Rockville, MD ADV PG 59

PRENTICE CORP

Palo Alto, CA ADV PG 60

RACAL-VADIC INC

Sunnyvale, CA ADV PGS 54,55

RIXON INC

Silver Spring, MD ADV PG 53

TEKTRONIX INC

Beaverton, OR ADV PGS 90,91

UNIVERSAL DATA SYSTEMS INC

Huntsville, AL ADV PG Cover IV

VEN-TEL INC

Santa Clara, CA ADV PG 65

Alanthus Data Communications Corp

Rockville, MD

American Information Development

San Francisco, CA

American Used Computer Co

Boston, MA

Anderson Jacobson

San Jose, CA

Astrocom Corp

St Paul, MN

Bell System

AT&T Assoc Telephone Co

New York, NY

Boston Financial & Equity Corp

Boston, MA

Carterfone Communications Corp

Dallas, TX

Cincinnati Bell

Cincinnati, OH

C & L Terminals Inc

Portland, OR

Codex Corporation

Mansfield, MA

Coherent Communications

Central Islip, NY

ComData Corp

Skokie, IL

Computer Datacom Inc

Irvine, CA

Computer Products Supply Co

Gaithersburg, MD

Comten Inc

St Paul, MN

Continental Resources Inc

Bedford, MA

CSS Telecommunications

Mountain View, CA

Data Access Systems Inc

Mountain Lakes, NJ

Data Dimensions Inc

Cos Cob, CT

Data Equipment Inc

Sunnyvale, CA

Datec Inc

Carrboro, NC

Develcon Electronics Inc

Doylestown, PA

Digicom Data Products Inc.

San Jose, CA

Electronic Interface Assoc Inc

New York, NY

Electro Rent

Burbank, CA

E-Systems Inc

Garland Div

Garland, TX

Expander Inc

Pittsburgh, PA

Gandalf Data Inc

Wheeling, IL

General Datacomm Ind Inc

Danbury, CT

General Electric — Instrumentation &

Communications Equip Service

Schenectady, NY

General Telephone Co of California

Santa Monica, CA

General Telephone Co of Kentucky

Lexington, KY

General Telephone Co. of the Southwest

San Angelo, TX

GTE Lenkurt Inc

San Carlos, CA

Hands-On Terminals Inc

Portland, OR

Harris Corp

Controls Div

Melbourne, FL

Hawaiian Telephone Co

Honolulu, HI

Hydri Control Systems Div

Houston, TX

Infotron Systems Corporation

Cherry Hill, NJ

Interactive Systems/3M

Ann Arbor, MI

Intertel Inc

Burlington, MA

Livermore Data Systems Inc

Livermore, CA

LM Ericsson Telecommunications

Woodbury, NY

MTI Sales Corp

Great Neck, NY

Multi-Tech Systems Inc

New Brighton, MN

NCR Corp

Dayton, OH

New England Telephone & Telegraph Co

Boston, MA

Novation Inc

Tarzana, CA

Nuclear Engineering Services Co

Sunnyvale, CA

NuData Corp

Little Silver, NJ

Omnitec Data

Phoenix, AZ

Penril Corp

Data Communications Div

Rockville, MD

Peripherals Corp

Bohemia, NY

Plantronics/Santa Cruz

Santa Cruz, CA

Prentice Corp

Palo Alto, CA

Pulsecom Div/Harvey Hubbell

Falls Church, VA

QEI Inc

Springfield, NJ

Racal-Vadic Inc

Sunnyvale, CA

RCA Global Communications Inc

New York, NY

RFL Industries Inc

Boonton, NJ

Rixon Inc

Silver Spring, MD

Rockwell International

Micro Electronics

Anaheim, CA

Selecterm Inc

Wakefield, MA

South Central Bell Telephone Co

Birmingham, AL

Southwestern Bell Telephone Co

St Louis, MO

Sperry Univac

Blue Bell, PA

Syntech Corp

Rockville, MD

Tek-Com

San Jose, CA

Tektronix Inc

Beaverton, OR

Tel-Tex Inc

Houston, TX

Teltone Corp

Kirkland, WA

Terminal Specialties Inc

Salt Lake City, UT

Terminal Systems Inc

N Hollywood, CA

Timeplex Inc

Rochelle Park, NJ

Transcom Inc

Sub of HI-G Inc

Windsor Locks, CT

Universal Data Systems Inc

Huntsville, AL

Utec Corp

Clifton, NJ

Vardon & Associates

Irving, TX

Ven-Tel Inc

Santa Clara, CA

W A Brown Instruments

Orlando, FL

Wavetek Data Communications

San Diego, CA

The Western Union Telegraph Co

Upper Saddle River, NJ

MODEMS, VOICE-GRADE — MEDIUM-SPEED (1,800-3,600 B/S)

CODEX CORPORATION

Mansfield, MA ADV PGS 81-88

GANDALF DATA INC

Wheeling, IL ADV PG 51

GENERAL DATACOMM IND INC

Danbury, CT ADV PGS 56,57

GENERAL ELECTRIC —

INSTRUMENTATION &

COMMUNICATIONS EQUIP SERVICE

Schenectady, NY ADV PGS 163,165

INFOTRON SYSTEMS CORPORATION

Cherry Hill, NJ ADV PG 31

INTERTEL INC

Burlington, MA ADV PGS 63,69

OMNITEC DATA

Phoenix, AZ ADV PG 62

Want to receive announcements of new products?

Turn to **UpDate Service Card, page 201.**

PENRIL CORP
DATA COMMUNICATIONS DIV
 Rockville, MD **ADV PG 59**
PRENTICE CORP
 Palo Alto, CA **ADV PG 60**
RACAL-VADIC INC
 Sunnyvale, CA **ADV PGS 54,55**
RIXON INC
 Silver Spring, MD **ADV PG 53**
UNIVERSAL DATA SYSTEMS INC
 Huntsville, AL **ADV PG Cover IV**
VEN-TEL INC
 Santa Clara, CA **ADV PG 65**
 Avanti Communications Corp
 Newport, RI
 Bell System
 AT&T Assoc Telephone Co
 New York, NY
 Billings Computer Corporation
 Provo, UT
 Cincinnati Bell
 Cincinnati, OH
 Codex Corporation
 Mansfield, MA
 ComData Corp
 Skokie, IL
 Comten Inc
 St Paul, MN
 Continental Resources Inc
 Bedford, MA
 CSS Telecommunications
 Mountain View, CA
 Data Dimensions Inc
 Cos Cob, CT
 Datedec Inc
 Carrboro, NC
 Electronic Interface Assoc Inc
 New York, NY
 E-Systems Inc
 Garland Div
 Garland, TX
 Gandalf Data Inc
 Wheeling, IL
 General Datacomm Ind Inc
 Danbury, CT
 General Electric — Instrumentation &
 Communications Equip Service
 Schenectady, NY
 General Telephone Co of California
 Santa Monica, CA
 General Telephone Co of Kentucky
 Lexington, KY
 General Telephone Co. of the Southwest
 San Angelo, TX
 GTE Lenkurt Inc
 San Carlos, CA
 Hawaiian Telephone Co
 Honolulu, HI
 Infotron Systems Corporation
 Cherry Hill, NJ
 Intertel Inc
 Burlington, MA
 Livermore Data Systems Inc
 Livermore, CA
 LM Ericsson Telecommunications
 Woodbury, NY
 MTI Sales Corp
 Great Neck, NY
 NCR Corp
 Dayton, OH
 New England Telephone & Telegraph Co
 Boston, MA
 Nuclear Engineering Services Co
 Sunnyvale, CA
 Omnitech Data
 Phoenix, AZ
 Penril Corp
 Data Communications Div
 Rockville, MD
 Prentice Corp
 Palo Alto, CA

Racal-Milgo
 Miami, FL
 Racal-Vadic Inc
 Sunnyvale, CA
 RCA Global Communications Inc
 New York, NY
 RFL Industries Inc
 Boonton, NJ
 Rixon Inc
 Silver Spring, MD
 Rockwell International
 Micro Electronics
 Anaheim, CA
 South Central Bell Telephone Co
 Birmingham, AL
 Southwestern Bell Telephone Co
 St Louis, MO
 Syntech Corp
 Rockville, MD
 Tel-Tex Inc
 Houston, TX
 Teltone Corp
 Kirkland, WA
 Terminal Specialties Inc
 Salt Lake City, UT
 Timeplex Inc
 Rochelle Park, NJ
 Universal Data Systems Inc
 Huntsville, AL
 Vardon & Associates
 Irving, TX
 Ven-Tel Inc
 Santa Clara, CA
 W A Brown Instruments
 Orlando, FL
 The Western Union Telegraph Co
 Upper Saddle River, NJ

E-Systems Inc
 Garland Div
 Garland, TX
 Gandalf Data Inc
 Wheeling, IL
 General Datacomm Ind Inc
 Danbury, CT
 General Telephone Co of California
 Santa Monica, CA
 General Telephone Co of Kentucky
 Lexington, KY
 General Telephone Co. of the Southwest
 San Angelo, TX
 GTE Lenkurt Inc
 San Carlos, CA
 Hawaiian Telephone Co
 Honolulu, HI
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 Cherry Hill, NJ
 Interactive Systems/3M
 Ann Arbor, MI
 Intertel Inc
 Burlington, MA
 Livermore Data Systems Inc
 Livermore, CA
 LM Ericsson Telecommunications
 Woodbury, NY
 MTI Sales Corp
 Great Neck, NY
 New England Telephone & Telegraph Co
 Boston, MA
 Nuclear Engineering Services Co
 Sunnyvale, CA
 Paradyne Corp
 Largo, FL
 Penril Corp
 Data Communications Div
 Rockville, MD
 Racal-Milgo
 Miami, FL
 RCA Global Communications Inc
 New York, NY
 Rixon Inc
 Silver Spring, MD
 Rockwell International
 Micro Electronics
 Anaheim, CA
 South Central Bell Telephone Co
 Birmingham, AL
 Southwestern Bell Telephone Co
 St Louis, MO
 Sperry Univac
 Blue Bell, PA
 Syntech Corp
 Rockville, MD
 Tel-Tex Inc
 Houston, TX
 Teltone Corp
 Kirkland, WA
 Terminal Specialties Inc
 Salt Lake City, UT
 Timeplex Inc
 Rochelle Park, NJ
 Universal Data Systems Inc
 Huntsville, AL
 W A Brown Instruments
 Orlando, FL
 The Western Union Telegraph Co
 Upper Saddle River, NJ

MODEMS, VOICE-GRADE — HIGH-SPEED (4,800-9,600 B/S)

CODEx CORPORATION
 Mansfield, MA **ADV PGS 81-88**
GANDALF DATA INC
 Wheeling, IL **ADV PG 51**
GENERAL DATACOMM IND INC
 Danbury, CT **ADV PGS 56,57**
INFOTRON SYSTEMS CORPORATION
 Cherry Hill, NJ **ADV PG 31**
INTERTEL INC
 Burlington, MA **ADV PGS 63,69**
PENRIL CORP
DATA COMMUNICATIONS DIV
 Rockville, MD **ADV PG 59**
RIXON INC
 Silver Spring, MD **ADV PG 53**
UNIVERSAL DATA SYSTEMS INC
 Huntsville, AL **ADV PG Cover IV**
 Applied Delta Systems Inc
 Bellmawr, NJ
 Avanti Communications Corp
 Newport, RI
 Bell System
 AT&T Assoc Telephone Co
 New York, NY
 Cincinnati Bell
 Cincinnati, OH
 Codex Corporation
 Mansfield, MA
 ComData Corp
 Skokie, IL
 Continental Resources Inc
 Bedford, MA
 CSS Telecommunications
 Mountain View, CA
 Data Dimensions Inc
 Cos Cob, CT
 Electronic Interface Assoc Inc
 New York, NY

MODEMS, WIDEBAND HALF-GROUP BAND (TO 19.2 KB/S)

PENRIL CORP
DATA COMMUNICATIONS DIV
 Rockville, MD **ADV PG 59**
 American Modem Corp
 Bohemia, NY
 Avanti Communications Corp
 Newport, RI

Bell System
AT&T Assoc Telephone Co
New York, NY
Canoga Data Systems
Canoga Park, CA
Cincinnati Bell
Cincinnati, OH
Electronic Interface Assoc Inc
New York, NY
General Telephone Co of Kentucky
Lexington, KY
Hawaiian Telephone Co
Honolulu, HI
Paradyne Corp
Largo, FL
Penril Corp
Data Communications Div
Rockville, MD
Southwestern Bell Telephone Co
St Louis, MO
Timeplex Inc
Rochelle Park, NJ

MODEMS, WIDEBAND GROUP BAND (TO 50 KB/S)

CODEx CORPORATION
Mansfield, MA **ADV PGS 81-88**
DIGITAL COMMUNICATIONS CORP
Gaithersburg, MD **ADV PG 79**
PENRIL CORP
DATA COMMUNICATIONS DIV
Rockville, MD **ADV PG 59**
American Modem Corp
Bohemia, NY
Avanti Communications Corp
Newport, RI
Bell System
AT&T Assoc Telephone Co
New York, NY
Canoga Data Systems
Canoga Park, CA
Cincinnati Bell
Cincinnati, OH
Codex Corporation
Mansfield, MA
Digital Communications Corp
Gaithersburg, MD
Electronic Interface Assoc Inc
New York, NY
General Telephone Co of Kentucky
Lexington, KY
GTE Lenkurt Inc
San Carlos, CA
Hawaiian Telephone Co
Honolulu, HI

Nuclear Engineering Services Co
Sunnyvale, CA
Paradyne Corp
Largo, FL
Penril Corp
Data Communications Div
Rockville, MD
Scientific-Atlanta Inc
Satcom Division
Atlanta, GA
Southwestern Bell Telephone Co
St Louis, MO
Stanford Telecommunications Inc
Sunnyvale, CA
Timeplex Inc
Rochelle Park, NJ

MODEMS, WIDEBAND SUPER-GROUP BAND (TO 230.4 KB/S)

DIGITAL COMMUNICATIONS CORP
Gaithersburg, MD **ADV PG 79**
PENRIL CORP
DATA COMMUNICATIONS DIV
Rockville, MD **ADV PG 59**
American Modem Corp
Bohemia, NY
Avanti Communications Corp
Newport, RI
Canoga Data Systems
Canoga Park, CA
Digital Communications Corp
Gaithersburg, MD
Electronic Interface Assoc Inc
New York, NY
Nuclear Engineering Services Co
Sunnyvale, CA
Penril Corp
Data Communications Div
Rockville, MD
Scientific-Atlanta Inc
Satcom Division
Atlanta, GA
Stanford Telecommunications Inc
Sunnyvale, CA

MIL 188C ADAPTERS

CODEx CORPORATION
Mansfield, MA **ADV PGS 81-88**
EPICOM INC
Altamonte Springs, FL . . . **ADV PGS 94,95**
PENRIL CORP
DATA COMMUNICATIONS DIV
Rockville, MD **ADV PG 59**

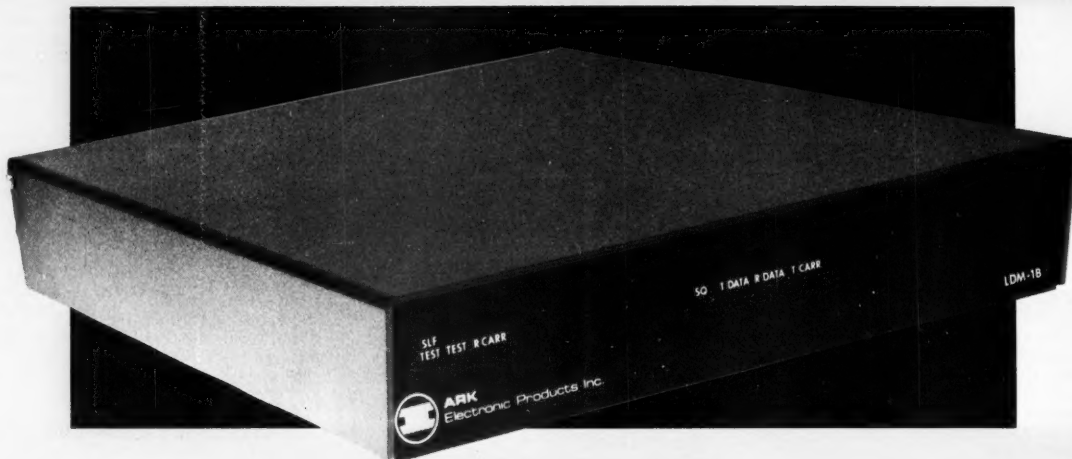
Applied Delta Systems Inc
Bellmawr, NJ
Canoga Data Systems
Canoga Park, CA
Codex Corporation
Mansfield, MA
DEI-Teleproducts
Escondido, CA
Epicom Inc
Altamonte Springs, FL
Expander Inc
Pittsburgh, PA
GTE Lenkurt Inc
San Carlos, CA
Hawaiian Telephone Co
Honolulu, HI
Hetra Computer & Communications
Industries Inc
Melbourne, FL
National Semiconductor Corp
Santa Clara, CA
Paradyne Corp
Largo, FL
Penril Corp
Data Communications Div
Rockville, MD
Pulsecom Div/Harvey Hubbell
Falls Church, VA
Racal-Milgo
Miami, FL
Teleprocessing Products Inc
Simi Valley, CA
Versitron Inc
Washington, DC

PARALLEL LINE EXTENDERS

EPICOM INC
Altamonte Springs, FL . . . **ADV PGS 94,95**
Canoga Data Systems
Canoga Park, CA
Compression Labs Inc
Cupertino, CA
DEI-Teleproducts
Escondido, CA
Epicom Inc
Altamonte Springs, FL

Find out about the company
that makes the product.
Turn to **Vendor Directory**,
page 301.

Limited Distance Modem Model 1B



- 1,800 to 19,200 bps
- Comprehensive diagnostic capabilities
- Complies with Bell System requirements
- Digital carrier detect for reduction of line noise effects
- Phase delay modulation technique for bandwidth conservation
- Compromise transversal equalizer for extended communications range
- High reliability and stability
- Stand-alone or rack-mount configuration

Ark Electronic Products also manufactures elastic asynchronous-to-synchronous interface adapters, port rotary selectors, modem eliminators, frequency division multiplexers and other data communications devices.

For technical data, contact:



ARK
Electronic Products Inc.

325 W. Hibiscus Boulevard • Melbourne, Florida 32901 • Telephone: (305) 724-5260

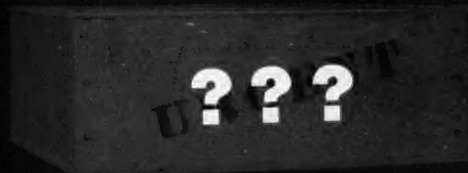
the user's choice

Gandalf pioneered short haul data transmission. Gandalf, the innovator in this technology, is the "user's choice" — over 50,000 units installed . . . a testimonial to quality, reliability and price/performance.

- LDS 120* — Asynchronous, up to 9,600 Baud, 5.5 miles.
- LDS 309* — Synchronous, switch selectable up to 19.2 Kbps.
- LDM 404B* — Synchronous, 4,800 bps over 3002 tariffed circuits, 50 miles plus.

*Meets Bell Pub. 43401

For complete information on Gandalf Modems write or call Gandalf Data, Inc. and ask for Short Haul Modem literature.



gandalf

Gandalf Data, Inc. 1019 S. Noel, Wheeling, Illinois 60090 (312) 541-6060
 Canada: Gandalf Data Communications LTD., Gandalf Plaza, 9 Slack Road, Ottawa, Ontario, Canada K2G 0B7 (613) 255-0565
 England: Gandalf Digital Communications LTD., Hospital Hill, Waterside, Chesham, Buckinghamshire HP51P5, Phone: Chesham (124-05) 4583

1100 Series Acoustic Coupler



- Low Power
- High Reliability
- Originate or Originate/Answer Modes
- 0 - 300 BPS
- 20ms and/or RS232C Interface
- Half/Full Duplex
- Hardware (DAA) Coupling
- W.E. 103/113 Compatibility
- U.L. Approved

1300 Series Modem



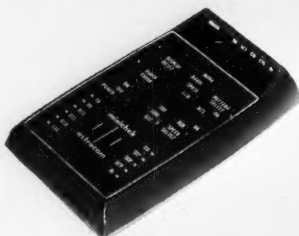
- Low Power
- High Reliability
- Originate, Answer, or Originate/Answer Modes
- 0 - 300 BPS
- RS232 Interface
- Auto - Answer Capability
- Half/Full Duplex
- W.E. 103/113 Compatibility
- Circuit Card, Stand-Alone, or Multimodem Rack Mount Configuration
- Interface Display
- U.L. Approved

120 Series Mode



- 0 - 1800 BPS
- Crystal Controlled Oscillator
- W.E. 202 Compatibility
- 5 BPS Reverse Channel
- Interface Display
- RS232C or TTL Interface
- Auto - Answer Capability
- High Reliability
- Circuit Card, Stand-Alone, or Multimodem Rack Mount Configuration

minichek Data Transmission Test Set



- Asynchronous or Synchronous Operation
- RS232 Interface Test Points
- Displayed Error Count
- Test Pattern Selection
- A Random 511 or 2047 Bit Test Pattern
- Selective Display of Interface Signals
- Battery Operated
- Pocket Size
- Low Battery Power Indication

astrocom corporation

DATA COMMUNICATIONS PRODUCTS

For additional information on these
and other Astrocom Products,
contact:

Thomas H. Frahm
612 / 227-8651

120 West Plato Boulevard
St. Paul, Minnesota 55107

Modem Emulator



- Low Power
- High Reliability
- Low Profile Package
- Circuit Card, Stand-Alone, or Multimodem Rack Mount Configuration
- Interface Display
- Multi-Speed - 2400 to 19,200 BPS
- Synchronous or Asynchronous

ASYNCHRONOUS SHORT HAUL MODEM



- Asynchronous
- 0 - 9600 BPS
- Point-to-Point or Multi-Point
- Status Indicator Panel
- Low Power
- Single Circuit Board Construction
- Circuit Card, Stand-Alone, or 16 Unit Rack Configuration
- U.L. Approved

MOS/2 Limited Distance Modem



- Designed to Operate in Conformance to ATT Technical Reference Pub 43401
- Low Power
- Multi-Speed - Switch Selectable 2400 to 19,200 BPS
- High Reliability
- Low Profile Package
- Self Test
- Interface Display
- Analog Loopback
- Digital Loopback
- Remote Control of Digital Loopback
- Circuit Card, Stand-Alone, or Multimodem Rack Mount Configuration
- U.L. Approved

400 Series Limited Distance Modem



- Remote Loop Test Capability (optional)
- Stable, Crystal Controlled Oscillator
- A Patented Digital Modulation and Demodulation Technique
- Circuit Card, Stand-Alone, or Multimodem Rack Mount Configuration
- W.E. 301/303 Interface Compatibility

The RIXON Alternative

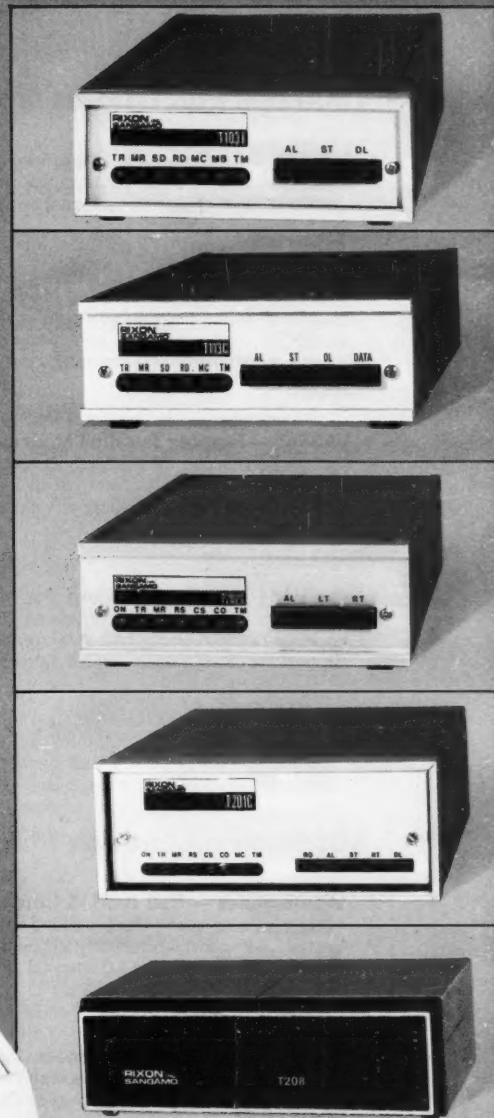
**Complete Line of FCC Registered
DDD Direct Connect Data Modems
Designed to Save You Money the
Moment You Plug Them In.**

- **DIRECT REPLACEMENT** — Unplug your Bell 103J, 113C, 202S, 201C, 208B or 212A and plug in a Rixon T103J, T113C, T202S, T201C, T208B or T212A replacement. It's that easy.
- **SAVE MONEY** — Compare prices . . . the Rixon Alternative is lower!
- **YOUR CHOICE** — LEASE OR BUY — With Rixon, you can lease with a buy option or buy outright.
- **OTHER Rixon ALTERNATIVES** include . . . dial-up test center . . . exchange/repair program . . . service contract . . . the latest technology and built-in diagnostics.
- **PEACE OF MIND** — For more than two decades, Rixon has served data communications needs with quality products and service.

A satisfied customer is our first consideration.

SEND FOR THE RIXON ALTERNATIVE KIT . . .

with details on our complete line of DDD data modems, a comparison chart on prices, details on our lease and service programs and more.



RIXON INC., A SUBSIDIARY OF
SANGAMO WESTON

2120 Industrial Parkway, Silver Spring, Maryland 20904
(301) 622-2121 • TWX: 710-825-0071

The Racal-Vadic Line of Modems

1200 bps Full Duplex Modems — Racal-Vadic VA3400 Compatible

VA3415 — for Computer Sites The VA3415 is a new Originate/Answer version of the 1200 bps full duplex VA3400. Crystal controlled for better frequency stability and reliability, the VA3415 transmits and receives at up to 1225 bps, permitting operation with multiplexers that overspeed. With Racal-Vadic's registered DAA, the VA3415 can directly connect to any dial-up telephone.



VA3434 — Acoustic Coupled Modem The new VA3434 is an originate only 1200 bps full duplex acoustic coupled VA3400 modem, which opens up new vistas for remote terminal users who have been shackled by 300 bps acoustic coupling. Now, these users can retain the same basic Bell 103 protocol, but can operate four times faster in an acoustic mode. The VA3434 can also be directly coupled to the telephone network using a manual CDT DAA or can be used on a leased line.



VA3455 — Remote Terminal Modem The VA3455 series of low cost stand-alone modems provides 1200 bps full duplex operation over the switched network or 2-wire leased line. The switched network modems have been registered for direct connect under FCC Rules, Part 68. The VA3455 can transmit and receive up to 1225 bps permitting operation with multiplexers that overspeed. These new modems are crystal controlled and use CMOS to keep power consumption to a minimum.



The VA3467 — Triple Modem The VA3467 direct connect, answer only triple modem, designed for central computer sites, automatically changes into a Racal-Vadic VA3400, a Bell 212A, or a Bell 103, depending on which remote modem is calling. A unique built-in microprocessor accomplishes this with an automatic recognition sequence that identifies the calling modem without disturbing normal connect protocols.



300 bps Full Duplex Modems — Bell 103/113 Compatible

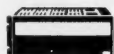
VA300 Series — Bell 103/113 Compatible VA300 series is completely compatible with all Bell 103 and 113 modems, offering system capabilities and options not available from Bell. Transmitter and receiver circuitry performs analog functions, with controls, interfacing and diagnostics added to provide unexcelled performance and flexibility at a low price. Models within the VA300 series can be used for auto dialing applications.



VA317 Series — Direct Connect The VA317 is a direct connect version of Bell's 113B/D auto answer 300 bps modem. The VA317 provides full duplex transmission at data rates to 300 bps over switched or leased two-wire telephone circuits. It will communicate with any Bell 103 or 113 compatible originating modem, including acoustic couplers.



VA325 — Designed for Multiline Automatic Calling The VA325 is designed to operate with Racal-Vadic's Multiline Automatic Calling System (MACS). An automatic originate/answer 0 to 300 bps modem fully compatible with Bell 103/113 units, the VA325 can automatically originate calls via the VA821 MACS system. Since one RS366 port can address up to 60 VA325s, the system is very cost effective.



VA355 — Remote Terminal Modem The VA355 Series of low cost, stand-alone modems provide direct connect 300 bps full duplex operation over the switched network or 2-wire leased lines. The VA355 is completely compatible with Bell 103 and 113 models. These new Racal-Vadic modems are crystal controlled and use the latest digital techniques & CMOS circuits to keep modem power consumption to a minimum.



Modem Packaging Legend



VA1601U for single channel remote sites
VA1601ACU for single channel auto calling sites



VA3434 Acoustic Coupler



"50" Series — high styled, low profile package



VA1616 Multiple Data Set for Computer Sites



VA1620 Multiple DAA chassis for Computer Sites



VS1200P OEM 1200 bps half duplex PC board



Custom circuit boards to OEM specifications

The Racal-Vadic Line of Modems

1200 bps Half Duplex Modems — Bell 202 Compatible

VA1200 Series — Bell 202 Compatible The VA1200 Series half duplex 1200 bps modems (with or without 5 bps reverse channel) are compatible with Bell 202 configurations, yet offer far more in performance, flexibility and test capabilities. These modems satisfy all 202 leased line, switched network, point-to-point, and multi-point requirements.



VA1250/55 — Remote Terminal Modem The VA1250/55 Series provides direct connect 1200 bps half duplex operation (with or without reverse channel) over the switched network. Leased line versions are also available. VA1250/55 modems use the latest digital techniques and CMOS circuits for high reliability and minimal power consumption, and are compatible with any Bell 202 type modem.



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Other Modems and Accessories

VA2400 — Bell 201 Compatible The VA2400 Series modems provide low cost synchronous data transmission at 2400 bps, utilizing unique detection techniques that improve performance and enable rapid acquisition over worst case lines. The VA2400 family is compatible with Bell's 201B/C leased line and switched network modems. Both 2-wire and 4-wire models are available. RTS/CTS delay is strappable for 7.1 milliseconds to optimize throughput.



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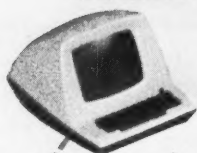
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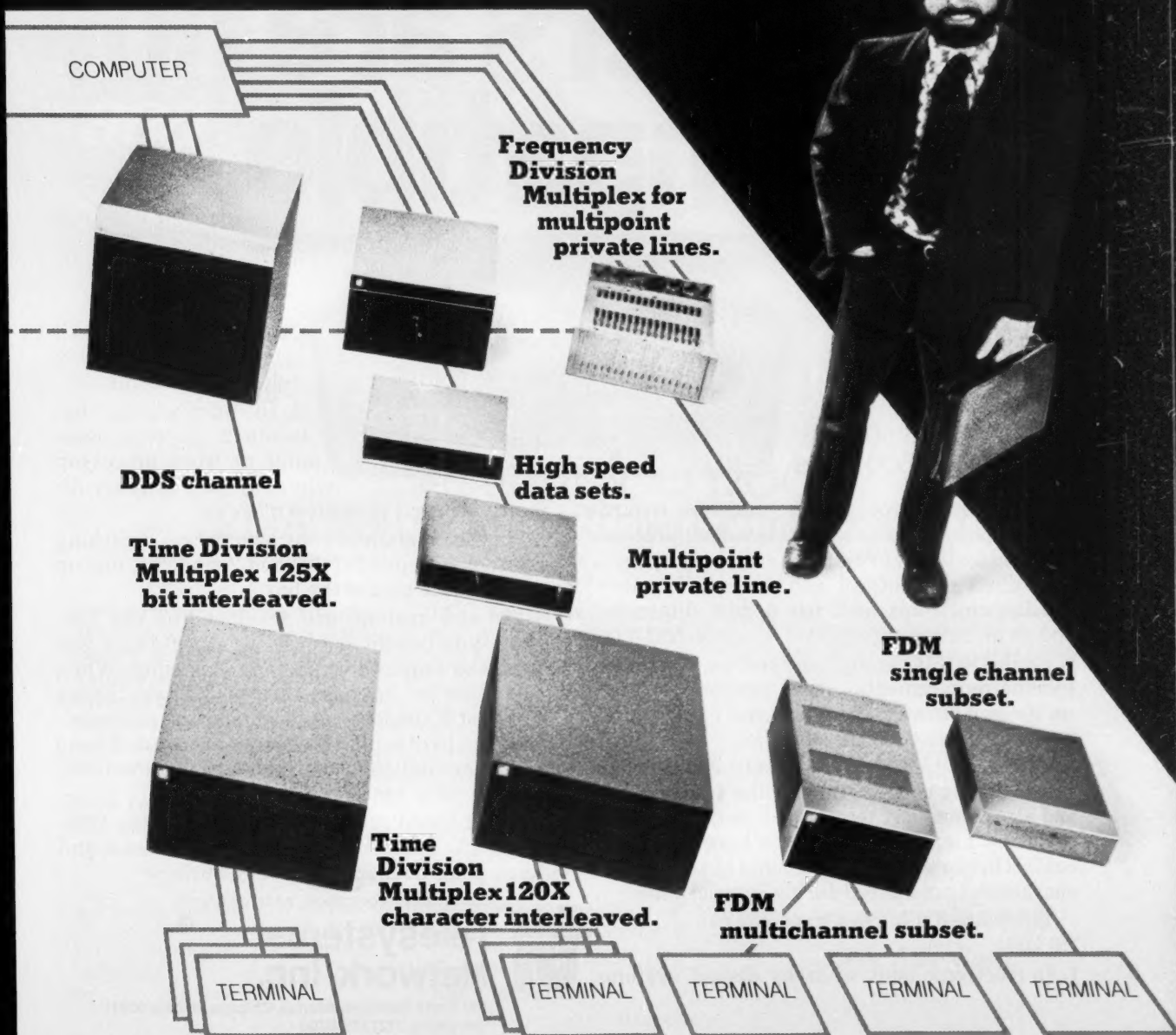
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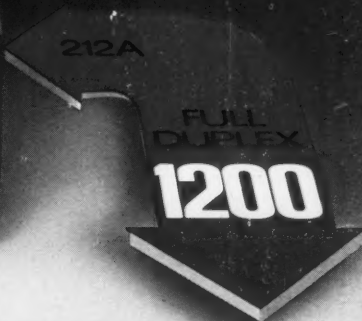
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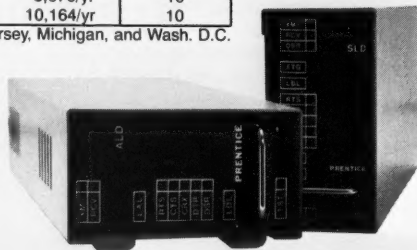
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202	ALD	270	770/yr	40
201C	SLD	462	1,512/yr	25
208A	SLD	1,706	2,796/yr	16
209A	SLD	4,316	5,676/yr	10
301 (19.2)**	SLD	8,564	10,164/yr	10

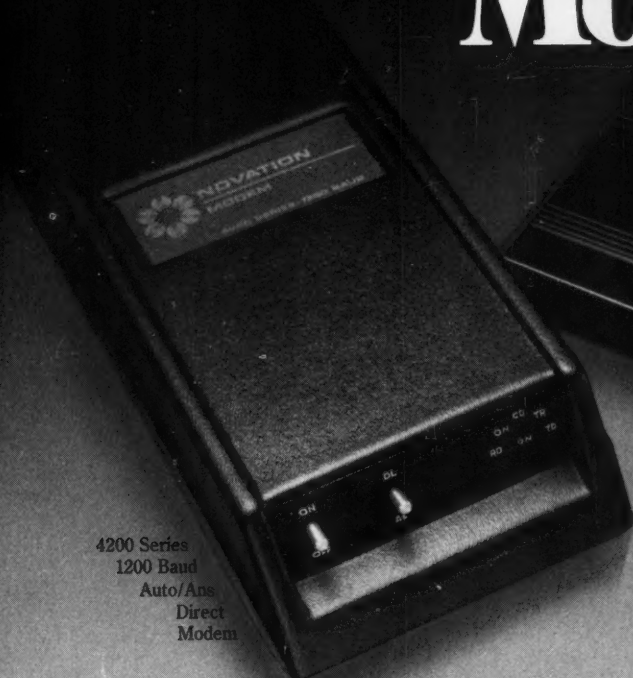
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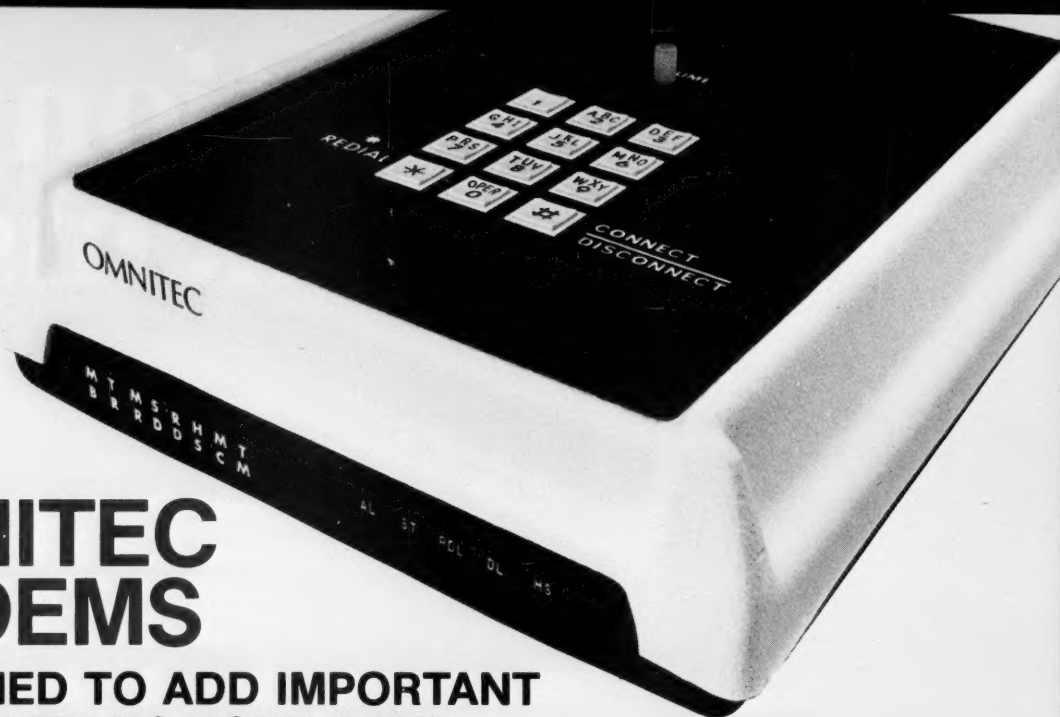
MODEL	DESCRIPTION
CAT	ANS/ORG CAT MODEM
4102A/CCITT	ACST/ORIG, EIA/C-LOOP 4102A/CCITT
4102A	MODEM, 300BPS ACST ORIG
4103A	MODEM, 300BPS ACST ANS/ORIG
4102D	MODEM, 300BPS ORIG ONLY, DIRECT
4113B	MODEM, 300BPS AUTO/ANS, DIRECT
4103B	MODEM, 300BPS ORIG/AUTO ANS, DIRECT
4133A	MODEM, 300BPS ACST ORIG TTY33 ONLY
4136A	MODEM, 300BPS ACST ORIG LA36 ONLY
T1733A KIT	MODEM, 300BPS ACST, ORIG T1733 ONLY
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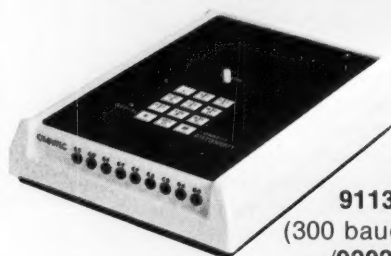
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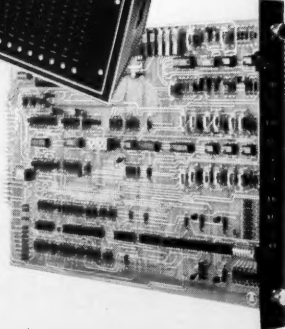
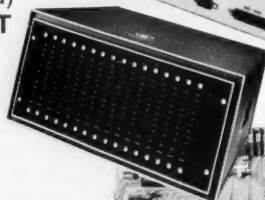
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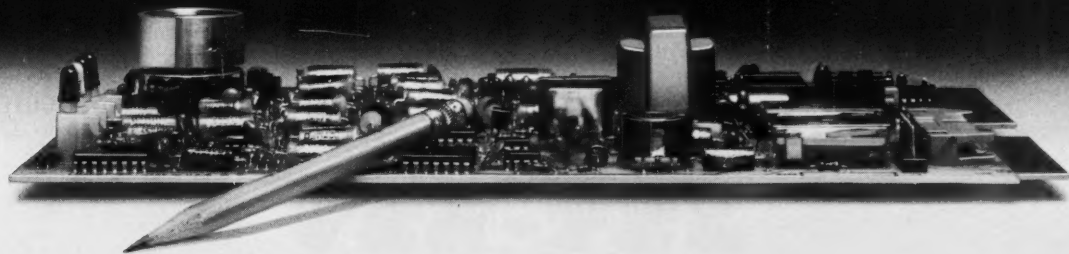
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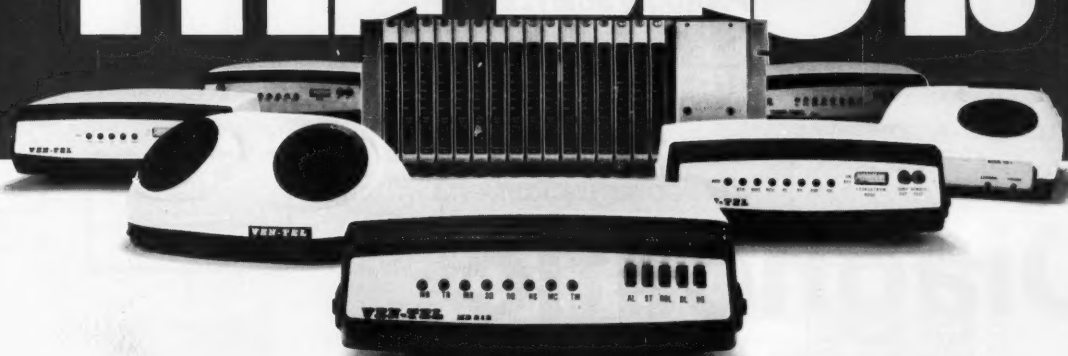
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Diagnostic and Test Equipment

In the wake of growing awareness that data communications is essential to business, and that, in many cases, network maintenance is more costly than the original purchase, users have been clamoring for more effective network control.

Vendors, of course, have happily moved in to fill the void created by the demand, although they give conflicting views on just what is the best way to provide network testing. A review of some network control vendors' methods indicates that although out-band signaling techniques have some limitations, this is the path that the suppliers will take.

Network-control equipment can be viewed as a maturation of the field of technical control. New microprocessor-based functions for isolating, diagnosing, and correcting problems in data communications give network control its distinction from passive tech control devices used for examining the status of lines and the condition of network equipment.

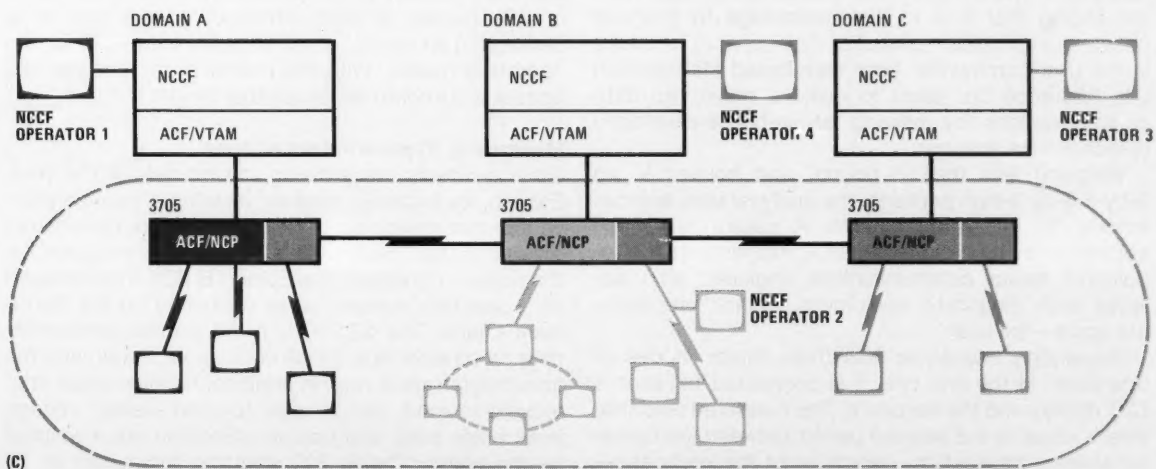
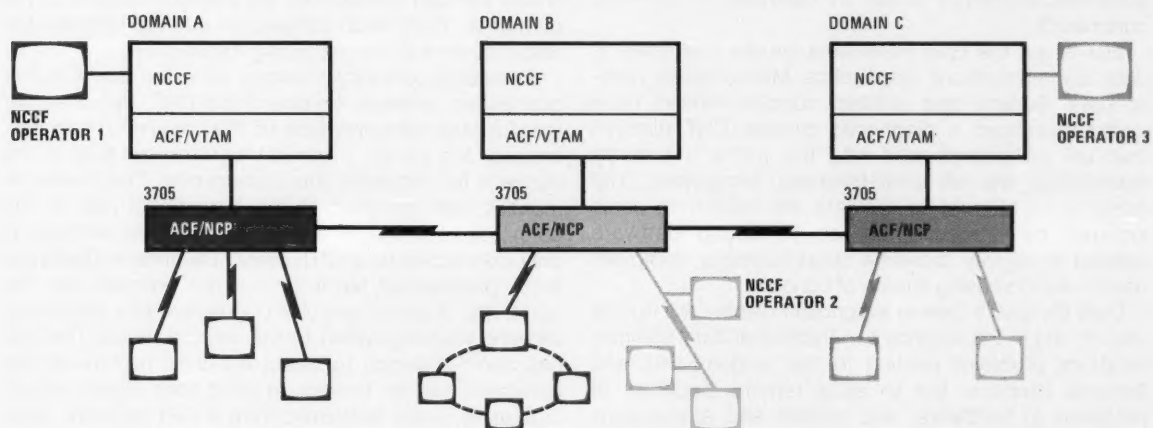
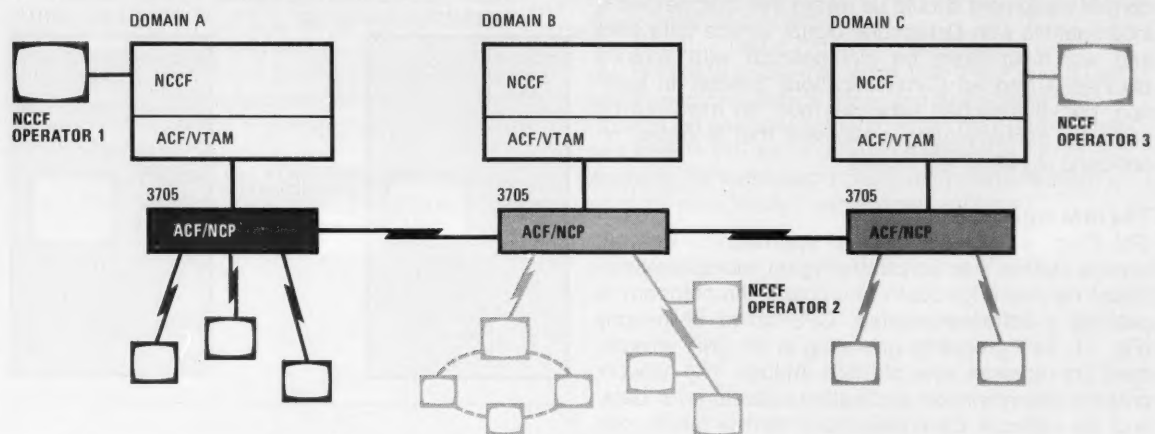
Intel Inc., Burlington, Mass., began delivery this

year of the EMS-One, a third-generation microprocessor-based device for network control. The EMS-One automatically learns network configuration, scans all lines simultaneously, runs qualification tests to find weak links before trouble starts, and allows network operators to do in-depth manual testing. EMS-One uses an out-band signaling technique to carry network control data.

Out-band signaling uses a reverse, 75-bit/s, asynchronous side channel of the main data link and therefore does not interfere with the main data flow. In addition, out-band signaling permits the network control unit to look at all transmission lines at once rather than in sequence—a technique known as parallel polling—making for faster status checks.

In-band signaling, on the other hand, interrupts the normal data flow to send control messages and is of no use if the source of the trouble is the line itself. Although it requires a user to disrupt the flow of data, it is simpler and costs less. With out-band, although data

1 Software diagnostics



flow is not disrupted, it costs an extra channel.

Users considering out-band-signaling-based network control equipment should be aware that this method is incompatible with Dataphone digital service data links and will most likely be incompatible with AT&T's planned Advanced Communications Service. In addition, packet-switched networks must be ruled out by any user contemplating equipment that is based on out-band signaling techniques.

The IBM approach

IBM Corp. is taking a different approach to network control. Rather than concentrating on microprocessor-based hardware for control purposes, the company is pushing a software-oriented, CPU-based philosophy (Fig. 1). Two programs operating in an SNA environment are representative of IBM's attitude. The network problem-determination application collects error data, and the network communications control facility can either initiate corrective action automatically or notify an operator of the available corrective actions.

Operator intervention is stressed over knee-jerk, automatic corrective action by hardware or software commands.

IBM is not the only mainframe vendor interested in data communications diagnostics. Minicomputer maker Data General and modem supplier Intertel have jointly developed a diagnostic modem/CRT terminal that will be incorporated into the former's recently established line of small-business computers. The move is an attempt to alleviate the escalating costs incurred by computer houses to debug software needed to satisfy first-time small-business computer users—an increasing source of concern.

Data General's Dasher diagnostic display will not be used to aid in the diagnosis of traditional data communications problems relating to the modem, line, and terminal interface, but to allow remote diagnosis of problems in hardware, and system and applications software (Fig. 2).

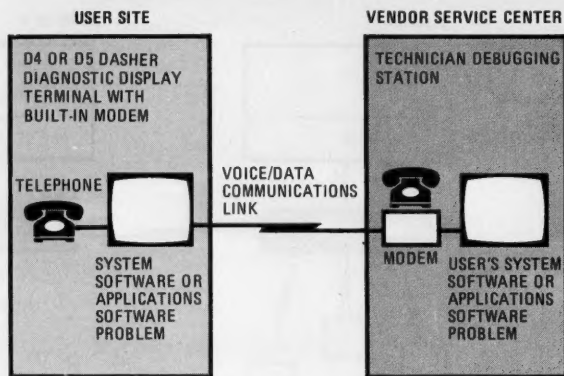
Do-it-yourself diagnostics

Aside from modem and mainframe vendors, large users are finding that it is to their advantage to promote network diagnostics—and offer their services to others in the user community. New York-based Metropolitan Life Insurance Co. plans to make a move into data communications by offering an in-house-developed response-time analyzer.

Weighing less than 1 pound, and housed in an 8-by-5.5-by-3-inch package, the analyzer uses approximately 30 integrated circuits. A patent has been applied for by its designer, Allan A. Kronenberg, Metropolitan's senior communications engineer, who believes such diagnostic equipment should "prepare—not scare—the user."

Kronenberg's analyzer has three major modes of operation. In the first one, it is connected between a CRT display and the keyboard. The measured response time is equal to the elapsed period between the operator-entered transaction—which locks the keyboard—and the computer's acknowledgment—which unlocks

2 Cutting service costs



the keyboard. The terminal stores the elapsed time to the nearest tenth of a second and may display it on a preselected section of the screen. When the operator enters the next transaction, the stored time goes to the computer. Thus, each transaction entered includes the response time of the preceding transaction.

A second operational mode uses the same in-line connection between keyboard and CRT, but does not measure the response time of the connected terminal. Instead, the device measures another terminal in the cluster—for instance, the busiest one. The measurement is then sampled at the operational rate of the connected terminal. In the third mode, the analyzer is only connected to a CRT. Here, the time is displayed for a preselected terminal, but not entered into the computer. A switch enables connection to a keyboard, allowing reconfiguration to the second mode. The unit has another switch to select either of two monitored terminals, and an isolator to keep their signals apart. Operating power is derived from a CRT terminal, such as an IBM 3277 or 3278 display station. An internal power supply is also available.

The analyzer can also be connected to a printer and can stand alone (no computer connection) with either a CRT, printer, or both. Kronenberg says that he is developing an interface unit to replace the CRT for the operational modes. With this interface, the analyzer will appear to its controller as another cluster terminal.

Measuring 10 parameters at once

Other products are entering the market all the time. Epicom, for instance, recently unveiled a new diagnostic tool that measures 10 different network parameters simultaneously. Each of the parameters measured by the tester—christened the Epibert EI 320—is displayed on a separate numeric panel contained on the instrument's face. The \$2,950 unit will provide concurrent data on bit error rate, block error, block count, and the transmission clock rate. In addition, receiver clock rate, request-to-send delay, clear-to-send delay, voltage level, noise level, and percent distortion are measured by the tester. The EI 320 operates full-duplex at 12 standard and four optional speeds to 100 kbit/s. ■

For more on diagnostics see the following Data Communications articles:

1. "Tech Control for More Uptime and Less Friction," V. Lester, et al, May 1978, p. 59. In vendor relations, goodwill pays off. Working with the phone company in the provision of network testing service lets the customer quickly spot troubles and identify them accurately. The carrier's service engineers then need less time to restore service.
2. "Software Tackles the Task of SNA Net Control," John J. Budway, May 1979, p. 83. Programs running

in conjunction with SNA telecommunications access methods can do two things: 1) they speed recovery from network failures and; 2) they assist in determining the location of problems.

3. "Portable Tester Controlled via Phone Lines," Barney Hordos and David G. West, July 1979, p. 71. Defective microprocessor-based products demand sophisticated analysis methods, which may be performed at a remote site with a down-line-loaded program — enabling the technician to receive immediate assistance for particularly troublesome problems.

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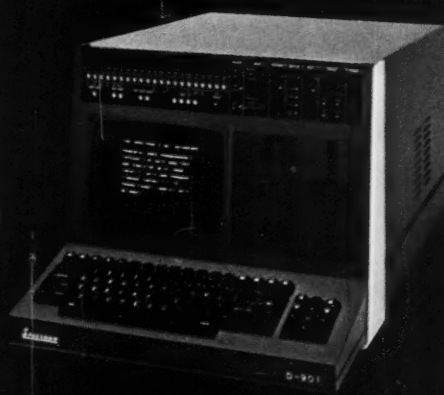
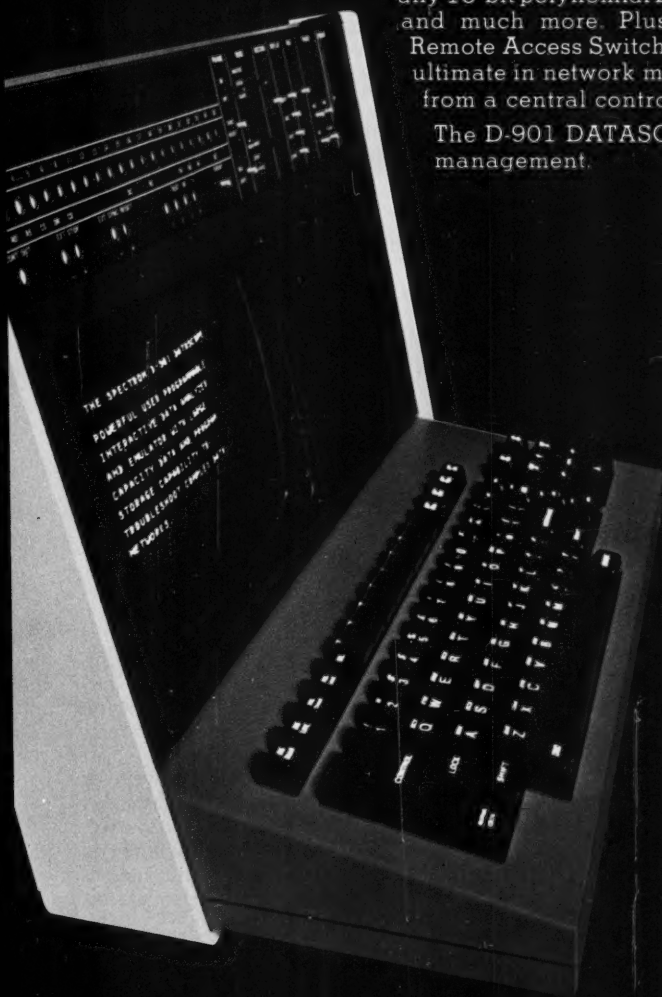
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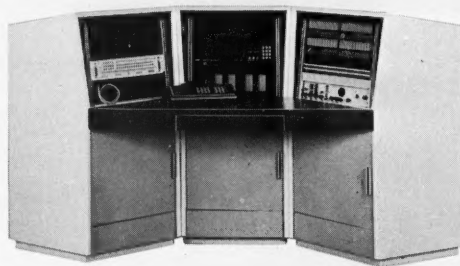
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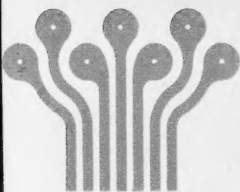


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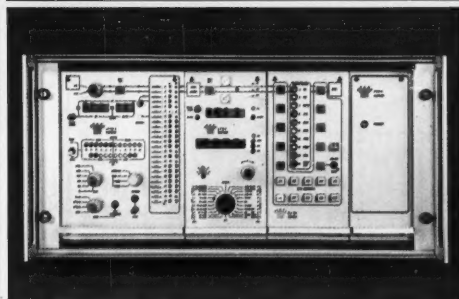
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Price: about \$250,000 for a network with 100 remote modems.



LINKTEST® \$695 in 1 to 9 quantity

Low cost, hand-held datacom tester. Isolates fault to modem, telephone line, terminal or computer. Ideal for small network and for limited distance modems. Measures bit errors, bias distortion, turnaround delay. Monitors modem interface. Sync. and async. operation up to 100,000 bps. Rackmount available.



SURGE GUARD-s From \$100 to \$500

Patented failsafe protection for modems, terminals, computers, telemetering, remote control. Passes data signals and 110V/4 Amps or 220V/2 Amps power through, but stops 20,000 Amps lightning hits in 1 picosecond. Just plug in externally. Self-resetting.

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explorer discovers Your Missing Link! ...Fast!

all new

The T-Bar TD-12 Explorer Digital Data Link Tester,
the first in a new generation ,
is the way to test all the links in your system
...terminals...modems...lines...front ends...software...
even if made by different vendors
or using a variety of protocols

TD-12 is EASY TO USE —

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Prestored Parameters
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- ☐ No Switches to Set

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- ☐ System Emulator
- ☐ Bit Error Rate Tester (BERT)
- ☐ Time and Clock
Measurement Device
- ☐ Network Efficiency
Measuring Device

TD-12 DIAGNOSES FASTER —

- ☐ Selective Storage and
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- ☐ Test Results Displayed

... all this with a minimum of technician training



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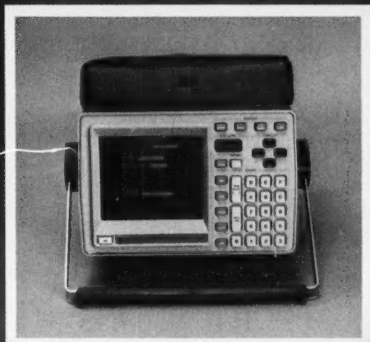
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Data Communications Switching Division.
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Wilton, CT 06897.
Telephone: 203/762-8351.
TWX: 710/479-3216.

HP helps you keep the lines open

INCREASE YOUR NETWORK AVAILABILITY USING PROTOCOL, DIGITAL AND ANALOG TESTING.

Protocol

HP 1640A Serial Data Analyzer



Most protocol errors are detected by using the HP 1640A across the serial data interface in the monitor mode. Quick access and set-up is accomplished by programming a simple menu, and through the extensive character trapping capability only the data of interest is displayed. In the active mode the low cost 1640A can simulate a CPU to exercise a new terminal, or simulate a terminal when bringing up a new application.

Digital

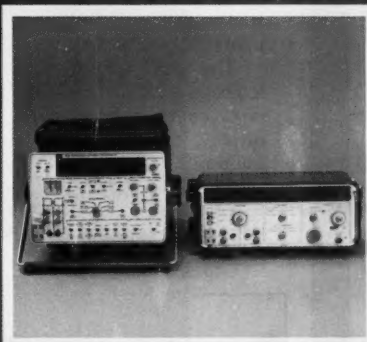
HP 1645 Data Error Analyzer



The popular bit error rate test is a very accurate way to assess the quality of a transmission system. Not limited to bit error rate alone, the HP 1645A has five other tests to isolate line problems from modem problems. For example, carrier dropouts indicate line problems, while data skew errors indicate problems in the receive modem.

Analog

HP 3551A Transmission Test Set
HP 4943A Transmission Impairment Measuring Set



The ability to isolate analog line faults from equipment failures is a major factor in reducing downtime. From the basic datacom measurement capability of the HP 3551A to the full tariffed parameter, remote testing capability of the HP 4943A, HP transmission test sets are used by common carriers for impairment testing on voice grade data lines.

Maintaining high system availability in multi-vendor data communication networks requires rapid isolation of faulty network components. Check the area that accounts for most of your downtime, then write for more information on how HP can help you keep the lines open.

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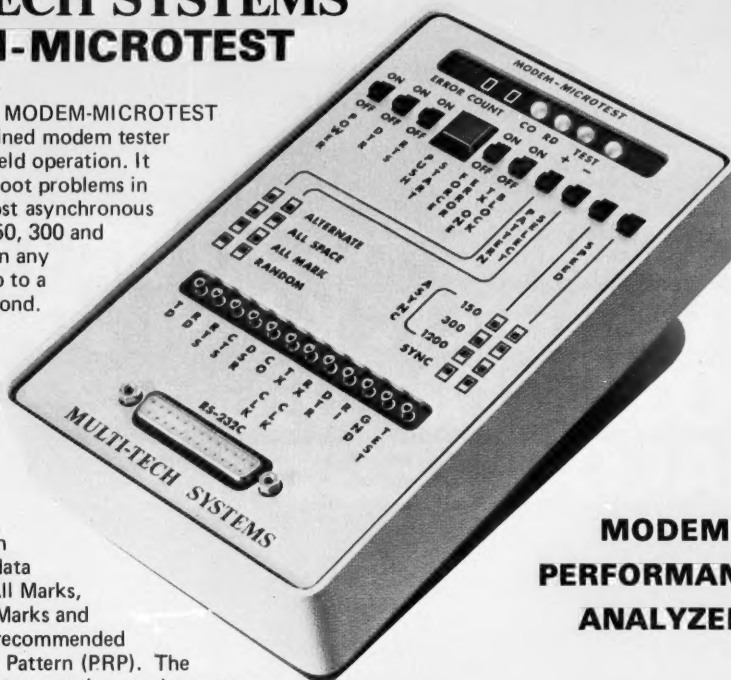
MULTI-TECH SYSTEMS MODEM-MICROTEST

The Multi-Tech Systems MODEM-MICROTEST is a complete, self-contained modem tester small enough for hand-held operation. It can be used to troubleshoot problems in transmission lines, in most asynchronous modems (at speeds of 150, 300 and 1200 bits/second), and in any synchronous modems up to a speed of 29,000 bits/second. The MICROTEST uses an internal crystal-controlled bit rate clock for asynchronous modems, and for synchronous modems uses the modem's Transmit and Receive Clocks.

The MICROTEST can generate four different data transmission patterns: All Marks, All Spaces, Alternating Marks and Spaces, and the CCITT-recommended 511-bit Pseudo Random Pattern (PRP). The MICROTEST can generate a continuous data pattern for prolonged testing or single data-block transmissions (a single block being 512 bits) controlled by the operator. This single block transmission control along with the capability of introducing a single bit-error into the block enables the operator to self-test the MICROTEST and isolate faults in most modem and transmission line environments.

The MICROTEST front panel has all control switches, indicators and test points conveniently and logically arranged with clear, permanently anodized descriptions of their functions. Included are a two-digit error count display, error count overflow and low battery indicators, RS232 interface test points with display, operator controls for Data Terminal Ready, Request to Send, Start of Transmission, error introduction and data pattern and speed selection. The MICROTEST interfaces to the modem via the standard RS232 connector.

Power for the MICROTEST is supplied by an integral rechargeable NICAD battery. Twenty-four hours of continuous operation can be provided with one twelve-hour (overnight) charging. A battery charger is supplied with the MICROTEST.



MODEM PERFORMANCE ANALYZER



The MODEM MICROTEST lists for \$345. Price includes adapter/charger, jumper wires and a vinyl carrying case.

TECHNICAL SPECIFICATIONS

Dimensions	6 1/2" x 4 1/4" x 1 1/2"
Weight	1 pound
Color	White ABS base with brushed aluminum face plate. Anodized lettering is navy blue. LED indicators are red.
Power	± 7.2 volts provided by rechargeable NICAD batteries. Battery capacity is 1/2 amp hours. 24 hours. Battery can be recharged repeatedly.
Continuous Operation	
Time per Charge	
Data Speed Rates	
Internally Generated	150, 300 and 1200 bits/second for testing asynchronous modems.
Externally Generated	Speeds up to 29,000 bits/second - established by synchronous modem's transmit and receive clocks.
Data Test Patterns	Random (CCITT 511-bit PRP code) All Spaces All Marks Alternating Marks and Spaces
Indicators (LED)	Two-Digit Error Count Display Error-Counter Overflow Indicator Low Battery Voltage Indicator Carrier On (CO) Indicator Receive Data (RD) Indicator RS232 + Test Voltage RS232 - Test Voltage
Connector	EIA RS232C - "DB25S" Connector

MULTI-TECH SYSTEMS, INC.

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INTELLIGENT NETWORK PROCESSORS™

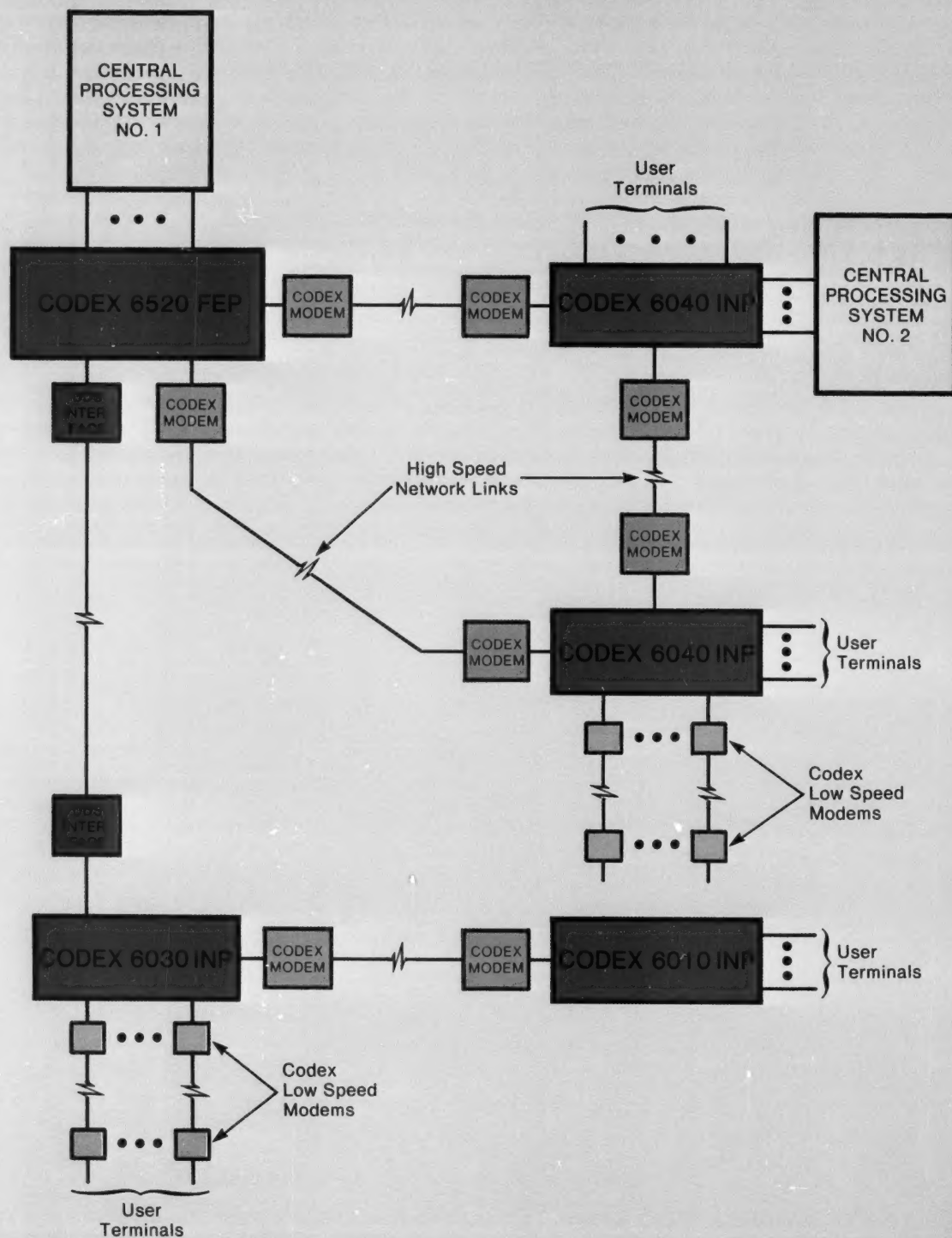
6000 SERIES



codex

CODEX 6000 INTELLIGENT NETWORK PROCESSORS

Typical Network Configuration



6000 SERIES

INTELLIGENT NETWORK PROCESSORS

The Codex 6000 Series Intelligent Network Processors (INP's) present the most advanced means of managing your data communications network. Based on an advanced multi-microprocessor architecture, the 6000 Series provides economy, distinctive performance characteristics, and advanced degrees of flexibility to solve your most demanding data communications problems.

More intelligent than a multiplexer, and more economical and efficient than a concentrator, the 6000 INP offers unique data handling functions at the nodes of your network. By distributing intelligence through the network, and by performing tasks that cannot be accomplished by traditional devices, the 6000 INP provides centralized network control and monitoring for all nodes, including the gathering of statistical measurements of network performance, and the detection and reporting of abnormal conditions when preset thresholds are exceeded.

The 6000 INP statistically combines information from a large number of terminals as traffic is offered. Dynamic bandwidth allocation allows the 6000 INP to handle more terminals than a traditional time division multiplexer for a given trunk speed. A data compression feature which substitutes short codewords for frequently used characters further increases throughput. This combination of statistical multiplexing and data compression provides overall savings by decreasing modem and line costs.

The 6000 INP is operationally transparent, and NO special equipment or software engineering is required for integration into your planned or existing system. Its modular design provides for growth in both size and functionality, from line concentration up to distributed network monitoring and control. In addition, the Codex 6000 Series INP implements a full-duplex GO-BACK-N ARQ (automatic repeat request) internodal protocol, assuring error-free communications.

THE 6000 SERIES INTELLIGENT NETWORK PROCESSORS FEATURE:

- Error-Free Transmission
- Operational Transparency
- Network Management and Performance Monitoring
- High Throughput Efficiency
- Modular Expandability
- Data Compression
- Network Configuration Control
- Multinode Capability
- Intermixed Data Rates and Protocols
- Autospeed
- System Diagnostics
- Capacity for up to 248 Terminals
- Multiplexed Network Interface to Codex 6500 Series Communications Front-End Processors

EXTENSIVE NETWORK CAPABILITIES

LOW COST REMOTE DATA CONCENTRATION

The Codex 6000 Series INP's provide efficient concentration and data compression, allowing you to transmit data streams from up to 248 low to medium speed terminals over one high speed line. With its error-free data transmission and high throughput, the 6000 INP reduces line requirements to substantially decrease your communications costs.

REPLACEMENT OF CONVENTIONAL TDM's

On high speed traffic links, the Codex 6000 Series INP's require a narrower digital bandwidth than a TDM, due to the INP's concentration and data compression features. The resulting transmission cost savings alone can justify the replacement of a TDM. The benefits of error control, enhanced network control and diagnostics are an added bonus.

DRAMATIC RESULTS IN BISYNCHRONOUS ENVIRONMENTS

The 6000 INP can dramatically increase the efficiency of bandwidth utilization in BSC environments. The bandwidth in terrestrial or satellite links, which ordinarily goes unused due to the half-duplex nature of BSC protocol, can be re-allocated by the 6000 INP to additional synchronous or asynchronous devices. This means that more terminals can communicate without additional costly communications links.

NETWORK GROWTH THROUGH MODULAR EXPANSION

The Codex 6000 INP offers a variety of features and hardware and software options that allow you to expand its capabilities as your data communications needs grow. To increase capacity, you can incrementally add terminal ports, throughput capability or memory storage by simply inserting additional plug-in modules. Features such as autospeed and custom data compression can also be easily incorporated at any time. And, as your system grows, the Codex 6000 Series INP's will keep pace with your requirements for sophisticated network monitoring and control.

NETWORK INTEGRATION

The Codex 6000 Series Intelligent Network Processors permit the integration of multiple applications-oriented networks under one transparent data transport system, despite an extensive mix of terminal types and host CPU's.

TURNKEY COMMUNICATIONS NETWORK FACILITY

The combination of the powerful network processing capabilities of 6000 INP's with the advanced communications features of the Codex 6500 Series Communications Front-End Processors (FEP's), presents a turnkey communications network facility that can be tailored to meet your specific applications. It allows you to upgrade your network, instead of your mainframe.

The Multiplexed Network Interface Capability of the 6500 Series FEP's permits you to extend your network capabilities to remote locations over a single physical connection to remote 6000 INP's. And, the multiplexing capabilities of the 6000 INP's allow multiple data terminals to communicate with your host computer. This interfacing scheme lets you achieve more efficient utilization of your processing resources, while increasing throughput and functionality.

ADVANCED FEATURES

ERROR-FREE TRANSMISSION

Using a highly efficient full-duplex ARQ scheme for node-to-node communication, the Codex 6000 Series INP's assure you of error-free transmission in the network. In addition, optional features are available to automatically monitor the quality of the communications links.

CENTRALIZED NETWORK CONTROL

You can achieve centralized network control with the Codex 6000 INP by either of two options.

An Operator Console can be used to select, examine and modify a variety of system configuration, status and performance data anywhere in the network. It also serves as a hardware diagnostic/test panel during installation and maintenance. The other system control device is a Control Terminal Port which allows local or remote monitoring, interrogation and reconfiguration. This port may be interfaced to most asynchronous terminals or directly to your Codex 6500 FEP or host computer.

NETWORK MANAGEMENT

The 6000 INP's Network Management feature provides full capability for the collection, computation, and centralized reporting of statistical measures of system performance. Vital advance information of potential bottlenecks or inefficient resource utilization is therefore at your fingertips. Typical information includes: character error rates of terminals, processor loading, memory utilization, data compression efficiency, line utilization, and traffic density. In addition, the Monitoring Option supplies reports whenever abnormal conditions occur, or user preset threshold levels are exceeded, while the Statistics Option produces longer term performance data in response to operator interrogation.

MULTINODE CONFIGURATIONS

The Codex 6000 INP is designed to support the interconnection of two or more nodes in a network. A variety of multinode distributed configurations, where each node may be connected to one or more neighboring nodes, can be structured, permitting you to alter the interconnections of source/destination pairs.

INTERMIX OF TERMINALS

Each terminal port module is capable of supporting asynchronous or BSC synchronous terminals, with other packages available on special request. Configuration changes to port type and characteristics can be handled directly from the Operator Console or the Control Terminal Port. No hardware strapping or board replacement is necessary.

- **Synchronous speeds (internal clock):**
1200, 2400, 3600, 4800, and 7200 bps
 - **Any external clock speed up to 7200 bps**
 - **Asynchronous speeds:**
75, 110, 134.5, 150, 300, 600, and 1200 bps
- Additional speeds are available on special order.

OPTIONS

AUTOSPEED

The Codex 6000 INP Autospeed Option provides automatic configuration of a terminal port to match the bit rate and character format of data from an asynchronous terminal. This feature allows a single terminal port to support a variety of asynchronous terminal speeds, without any operator intervention.

SUPERVISORY COMMUNICATIONS SUPPORT

The Supervisory Communications Support (SCS) Option gives you an "Engineering Order Wire" type of facility on 6030/6040 INP systems. It provides automatic message routing between network control personnel at all or at selected nodes of your network. Flow and error-control capabilities implemented by SCS route supervisory communications around link failures.

REPORT LOGGING

The Report Logging/Control Terminal Port (RL/CTP) Option automatically presents and logs system reports at user-selectable intervals. All reports include time stamp data, and may be output as they occur, or may be queued and output at preset intervals.

The RL/CTP is applicable with any asynchronous ASCII terminal equipment. It provides standard control terminal functions in addition to report logging.

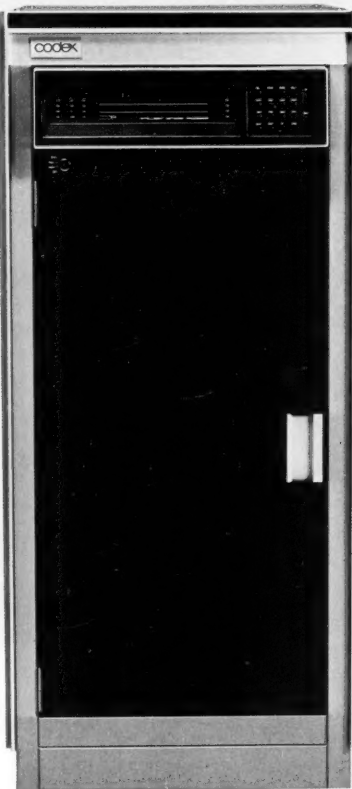
THE MEMBERS OF THE 6000 FAMILY



6010

6010

The 6010 INP is designed for a point-to-point communications link supporting up to thirty dial-in or dedicated asynchronous terminals. The 6010 can also perform remote concentration in multinode networks. Standard hardware includes a processor/controller, a nest to accommodate 30 port channels and a high speed interface. High speed line rates up to 9600 bps are supported.



6040

6030

Like the 6010, the 6030 INP is designed to operate in point-to-point communications environments, or as a remote tail concentrator site in multinode networks. It is available in models which accommodate 28, 60, 96, or 124 synchronous or asynchronous lines. Standard hardware includes a processor/controller, a nest to house port modules, and one high speed network link interface. Autospeed is offered as an optional feature.



6030

6040

The 6040 INP is designed to operate in multinode communications environments. In addition to providing all of the features of the 6030 INP, the 6040 can be expanded to support multiple high speed network link interfaces and up to 248 asynchronous or synchronous lines.

MAINTENANCE

Should your Codex 6000 Intelligent Network Processor ever require service, you will find that ease of maintenance has been designed into the product. Identification of problem areas is facilitated by extensive system and module diagnostics. And, the modular design allows you to replace individual hardware components, simply and quickly, for minimum downtime.

SERVICE

Codex provides on-site installation and maintenance service throughout the U.S. by our own factory-trained communications specialists, with comparable support provided by our distributors throughout the world. These highly skilled

Customer Service Engineers will assist you with application analysis, operation training and localized maintenance, to assure that the Codex 6000 Series Intelligent Network Processors will maintain maximum efficiency in your day-to-day network operations.

With over 15 years' experience in high speed data communications, we understand your need for prompt, efficient and reliable service, and we strive to provide the best in the industry.

ORDERING INFORMATION

Detailed specifications and ordering information can be obtained from your local Codex Sales Office. Refer to the back cover for the Codex office or distributor in your area.

WE'LL GET YOU THROUGH

Codex is a single source for the most complete range of high performance data communications systems and equipment in the industry. Our products are engineered, built, and tested to set new standards for dependable performance over local, national and international communi-

cations links. The reliability and adaptability of Codex products are the key ingredients for maintaining viable data transmission systems that will meet the rapidly changing needs of the data communications industry.

6000 SERIES CAPABILITIES	6010	6030	6040
<ul style="list-style-type: none"> Network Environment <ul style="list-style-type: none"> Point-to-Point 6030/6040 Network Feeders 	Yes Yes	Yes Yes	Yes
<ul style="list-style-type: none"> Data Environment <ul style="list-style-type: none"> Asynchronous BSC 	Yes	Yes Yes	Yes Yes
<ul style="list-style-type: none"> Throughput (char/sec) 	2000	to 3000	to 6000
<ul style="list-style-type: none"> Line Capacity <ul style="list-style-type: none"> No. of Terminal Lines Standard Async Speed (all members) Standard Sync Speed (6030/6040) No. of Network Links 	to 30 75, 110, 1 to 9600 bps	to 124 134.5, 150, 300, 600, 1200, 2400, 1 to 19.2 kbps	to 248 1200 bps 3600, 4800, 7200 bps multiple to 19.2 kbps
<ul style="list-style-type: none"> Link Protocol <ul style="list-style-type: none"> FDX ARQ Autoecho Autospeed System Monitoring Statistics Control Terminal Port Interface Supervisory Communications Support Report Logging Alternative Configurations Data Restraint 	X.25 Level II Compatible Yes Yes Yes* Yes Yes Yes Yes Yes	Codex Data Link Procedure Yes Yes Yes* Yes-extensive Yes-extensive Yes* Yes* Yes* 1 additional Yes*	Yes Yes Yes* Yes-extensive Yes-extensive Yes* Yes* Yes* up to 3 additional Yes*

*Optional Features

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833 DATA SHEET

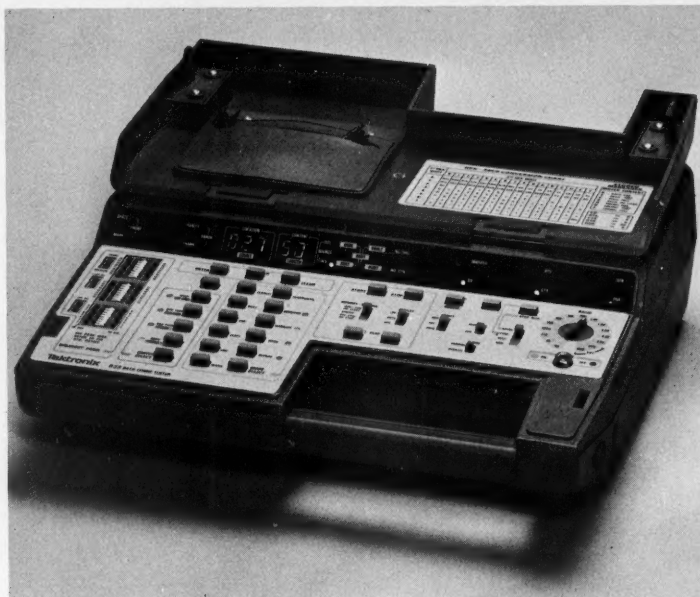
833 Data Comm Tester

The Tektronix 833 Data Communications Tester is a high-performance, first-line service tool that provides the service technician with the means to locate problems in a data communications network. The 833 is lightweight (under 12 pounds/ 5.5 kilos), compact, and portable. Keypad entry and an easy to understand front panel simplify learning to use the 833. A string search function permits automatic examination of stored data.

The 833 Data Comm Tester operates on the RS-232 interface. The 833 can monitor the DCE and DTE in synchronous, asynchronous, and HDLC modes. HDLC data streams can be either standard or NRZI-encoded. It can simulate the DCE in synchronous and asynchronous modes and can also calculate and verify CRC-16, CCITT-HDLC, and LRC-8 block check characters.

For checking modems and phone lines, the 833 features BERT/BLERT capabilities.

The 833 user PROM feature gives the first-line service force an automatic, pre-programmed series of tests. This PROM is user-defined for specific applications so the 833 can be customized to fit particular service needs. Use this PROM to perform frequently used standard test sequences, and then, if necessary, create test sequences directly in the 833 to make more specific tests and further isolate faults.



Support materials (manuals, user's guides) and video tape training aids are available.

For more information about how the 833 Data Comm Tester can help you identify problems in data communications systems, contact your Tektronix Field Engineer. Or, in the U.S., write Tektronix, Inc., U.S. Marketing, P.O. Box 1700, Beaverton, OR 97075. In Africa, Europe, Middle East write Tektronix International, Inc., European Marketing Centre, Postbox 827, 1180 AV Amstelveen, The Netherlands. In Asia,

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833 Data Comm Tester

ELECTRICAL

Data Transmission Timing — Synchronous and asynchronous.

Communications Mode — Half- or full-duplex.

Bits Per Character — 5, 6, 7, or 8.

Data Transfer Rates —

Internal (crystal controlled) — 50, 75, 110, 134.5, 150, 200, 300, 600, 1200, 1800, 2400, and 4800 bits per second. 9600 bits per second at 8 bits per character only. Accuracy — within 0.5%.

External — Determined by the DCE or DTE clock.

Parity — Odd, even, or none.

Block Check Characters — CRC-16, CRC-CCITT, LRC.

Synchronizing Character (SYN), (synchronous mode only) — Programmable to require one or two characters. If not programmed, defaults to ASCII SYN character.

RTS/CTS Delay, (half-duplex mode only) — Programmable from 0 to 255 ms. If not programmed, defaults to 200 ms. Accuracy — Within 1% \pm 1 ms.

Stop Bits (asynchronous mode only) — Programmable to 1, 1½, 2.

Trigger — Programmable to require a sequence of 1, 2, or 3 characters.

Trigger Position — Location of last trigger character in Receive Buffer: Post Trig, 000; Center, 127; Pre Trig, 255.

Bit Error Rate/Block Error Rate Tests —

Standard 511-bit pattern stream for 1000-bit blocks; continuous, 10⁰ or 10⁴-bit block test; stores bits in error, blocks sent, blocks in error, and sync faults.

String Search — Programmable to search for one sequence of 1, 2, or 3 characters.

RS232 DCE CONNECTOR (J1405)

Inputs

Pin 3 Received Data, Pin 5 Clear to Send, Pin 6 Data Set Ready, Pin 8 Carrier Detect, Pin 15 Transmission Signal Element Timing (DCE source), Pin 17 Receiver Element Timing (DCE source) — MARK or OFF: $-25\text{ V} \leq V_{in} \leq +0.75\text{ V}$. SPACE or ON: $+1.5\text{ V} \leq V_{in} \leq +25\text{ V}$. Input Impedance: $3\text{ k}\Omega \leq Z_{in} \leq 7\text{ k}\Omega$.

Pin 20 Data Terminal Ready, Pin 24 Transmit Signal Element Timing (DTE source) — MARK or OFF: $-25\text{ V} \leq V_{in} \leq -3\text{ V}$. SPACE or ON: $+3\text{ V} \leq V_{in} \leq +25\text{ V}$. Input impedance with corresponding pin in DTE connector disconnected: $Z_{in} \geq 40\text{ k}\Omega$. Pin 24 $Z_{in} \geq 100\text{ k}\Omega$.

Outputs

Pin 2 Transmitted Data, Pin 4 Request to Send — MARK or OFF: $V_{out} \leq -7.5\text{ V}$. SPACE or ON: $V_{out} \geq +7.5\text{ V}$. With load impedance: $R_L \geq 3\text{ k}\Omega$.

Other

Pin 1 Ground — Connected to pin 1 of DTE connector.

Pin 7 Signal Ground — Connected to instrument ground.

Pins 9 thru 14, 16, 18, 19, 21 thru 23, and 25 — Connected through switches (Breakout Panel DIP switches) to their corresponding pins in the DTE connector.

RS232 DTE CONNECTOR (J2005)

Inputs

Pin 2 Transmitted Data, Pin 4 Request to Send — MARK or OFF: $-25\text{ V} \leq V_{in} \leq +0.75\text{ V}$. SPACE or ON: $+1.5\text{ V} \leq V_{in} \leq +25\text{ V}$. Input impedance: $3\text{ k}\Omega \leq Z_{in} \leq 7\text{ k}\Omega$.

Pin 20 Data Terminal Ready, Pin 24 Transmit Signal Element Timing (DTE source) — MARK or OFF: $-25\text{ V} \leq V_{in} \leq -3\text{ V}$. SPACE or ON: $+3\text{ V} \leq V_{in} \leq +25\text{ V}$. Input impedance with corresponding pin in DCE connector disconnected: $Z_{in} \geq 100\text{ k}\Omega$.

Outputs

Pin 3 Received Data, Pin 5 Clear to Send, Pin 6 Data Set Ready, Pin 8 Carrier Detect, Pin 15 Transmission Signal Element Timing (DCE source), Pin 17 Receiver Signal Element Timing (DCE source) — MARK or OFF: $V_{out} \leq -7.5\text{ V}$. SPACE or ON: $V_{out} \geq +7.5\text{ V}$. With load impedance: $R_L \geq 3\text{ k}\Omega$.

Other

Pin 1 Ground — Connected to pin 1 of DCE connector.

Pin 7 Signal Ground — Connected through a switch (Breakout Panel DIP switch) to instrument ground.

Pin 9 thru 14, 16, 18, 19, 21 thru 23, and 25 — Connected through switches (Breakout Panel DIP switches) to their corresponding pins in the DCE connector.

BREAKOUT PANEL

Probe —

Space: $+3\text{ V} \leq V_{in} \leq +25\text{ V}$.

Mark: $-25\text{ V} \leq V_{in} \leq -3\text{ V}$.

Input Impedance: $\geq 50\text{ k}\Omega$.

Marker — MARK or OFF: $-25\text{ V} \leq V_{in} \leq -3\text{ V}$.

SPACE or ON: $+3\text{ V} \leq V_{in} \leq +25\text{ V}$ (Schmitt input).

+12 Volt Source — $+12\text{ V} \pm 1\text{ V}$ (no load). Output Impedance approx $3\text{ k}\Omega$ (each pin).

-12 Volt Source — $-12\text{ V} \pm 1\text{ V}$ (no load). Output Impedance approx $3\text{ k}\Omega$ (each pin).

DISPLAY

Buffer CONTENT — 2 hexadecimal digits: 7-segment, LED displays.

Buffer LOCATION — 3 decimal digits: 7-segment, LED displays.

Data Source — DCE, DTE: 2 LED indicators.

Error — Parity, Frame: 2 LED indicators.

No Trig, No Syn — 2 LED indicators.

RS232 Control Lines — DSR, DC, CTS, RTS, DTR, and MARKER: 6 LED indicators.

Probe — Mark, Space: 2 LED indicators.

PHYSICAL

Dimensions (approx.)	cm	in
Width	33	13
Height	10	4
Length	31	12
Weight	kg	lb
Net	5	11

MEMORY

Receive buffer and send buffer are each 256 characters. Basic instrument contains in memory a group of 7 separate standard test messages such as "THE QUICK BROWN FOX —" and the full ASCII Alphanumeric set.

There is provision in the 833 for installation of user defined and programmed EPROMs containing messages specific to particular tests. A total memory space of 2048 characters is available for user specification.

POWER REQUIREMENTS

Line Voltage Ranges —

115 V — 90 to 132 V.

230 V — 180 to 250 V.

Line Frequency Range — 48 to 440 Hz.

Power Consumption — Approx 15 watts.

ENVIRONMENTAL

Temperature — Operating: 0° to $+50^\circ\text{C}$ ($+32^\circ$ to $+122^\circ\text{F}$). Nonoperating: -55° to $+75^\circ\text{C}$ (-67° to $+167^\circ\text{F}$).

Humidity — 5 cycles (120 hrs), 30° to 60°C , 95% relative humidity.

Altitude — Operating: To 15,000 feet (4500m). Nonoperating: To 50,000 feet (15,000m).

Vibration — Cycle the vibration frequency from 10 to 55 to 10 Hz (linear or logarithmic sweep) for a duration of 15 minutes in each major axis at a displacement of 0.025 inches (0.64 mm) peak to peak. Dwell for 10 minutes in each major axis at any resonant frequency.

Shock — 50 g's, $\frac{1}{2}$ sine, 11 ms duration, three shocks in each major axis for a total of 18 shocks.

INCLUDED ACCESSORIES

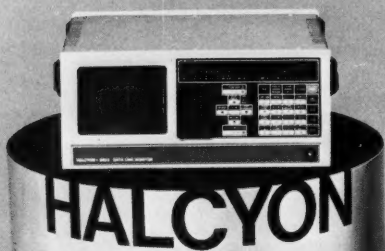
RS-232 cable assembly (012-0815-00), jumper set (198-4006-00), power cord (061-0066-00), Y-connector (012-0893-00).

ORDERING INFORMATION

833 Data Comm Tester \$2,750

OPTIONAL ACCESSORIES

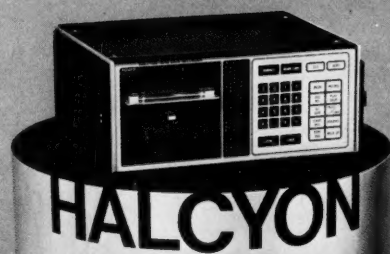
Self Test Adapter —
Order 067-0878-00 \$100
Current Loop Pod Accessory —
Order 015-0361-00 \$325



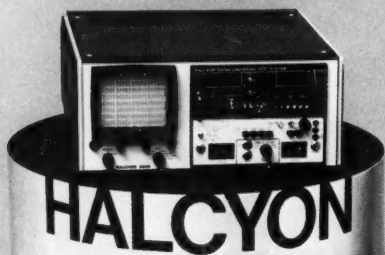
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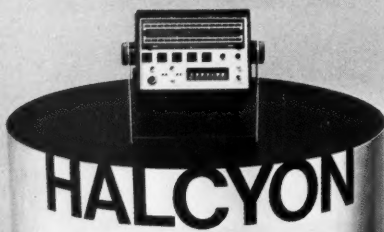
HALCYON



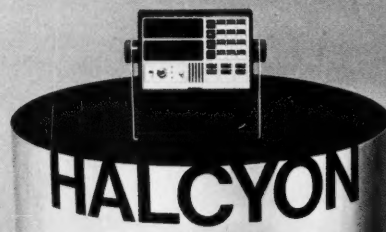
HALCYON



HALCYON



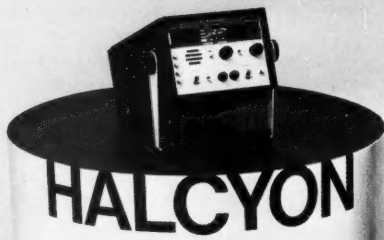
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Hook up with Halcyon... on either side of your modem.

When you're having data-transmission problems, why confine your testing to just the digital or the analog side of the modem? Halcyon instruments do it all. From real-time analysis of the bit stream to complex testing of a DDD or dedicated circuit, there's a Halcyon instrument that's right for the job.

There's also a Halcyon intelligent network processor to help you make the most of your transmission facilities. And, for good measure, Halcyon has six regional service centers to help keep your equipment operating efficiently. It adds up to a total commitment to data communications:

1. **802A Data Monitor.** Monitors on-line at up to 56K bps full duplex—automatically configuring itself for the correct codes, protocols, and bit rates. Displays up to 1024 characters on its large screen and can drive a color monitor. Operates in either of two multiplex modes and traps on selected events. Microprocessor based. Options include an on-board mini-cassette recorder.

2. **803A μ Fox™ Data Link Analyzer.** For the complete analysis of data-link problems. Microprocessor based, the 803A does just about everything from simple monitoring to complex emulation. Powerful, simple instruction set makes it easy to generate test programs. On-board mini-cassette recorder optional.

3. **804A Data Recorder.** Can be used alone or with a data-link analyzer for on-line recording. Microprocessor control makes it fully programmable to start and stop on selected events. Playback speed is independent of data

rate. Record rates to 56K bps and storage capacity to 18.4 Megabits.

4. **520B2 Universal Test System.** The most advanced system available for testing analog circuits. Measures all significant parameters, including frequency, amplitude response, noise, notch noise, phase jitter, envelope delay, and others. Counts all transient events (impulse noise, phase hits, gain hits, and dropouts).

5. **545A Phase/Amplitude Jitter Test Set.** Simultaneously displays phase and amplitude jitter or standard and low-frequency jitter. Permits identification of noise-caused jitter components, and counts all transient events. Stands alone or forms a complete analog test package when combined with the 701A Transmission Test Set.

6. **547A 107 Line Test Set.** Automatically follows the signal format of the telephone company's dial-up 107 Test Line, measuring and storing all significant parameters (P/AR, slope, non-linear distortion, phase jitter, etc.). Also counts transient events. Includes dial and pad and dual displays.

7. **701A Transmission Test Set.** Measures transmission level, frequency, noise, and notch noise. Includes fixed and variable oscillator, four noise-weighting networks, dual displays, and dial/hold capability. Use it alone or combine it with the 545A for more testing ability.

8. **704A Wide-Band Test Set.** All the measurement capability of the 701A—plus extended frequency range and three-level impulse noise counting. Can be used on circuits ranging from voice bandwidth to wide-band data.

When equipped with the 705A Dial and Hold Unit, the 704A can simultaneously test two dial-up circuits.



9. **4100B Network Processor.** Statistically multiplexes up to 63 data lines on one high-speed, voice-bandwidth trunk for dramatic improvement in cost-effectiveness. Provides centralized network control, including performance statistics, configuration control, and diagnostics.

With such an array of equipment to support your data transmission, you can't go wrong when you hook up with Halcyon. On either side of your modem.



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Among the house specialties at EPICOM, Inc., are:

EPIVIEW Data Monitors. Model 100 covers the byte-oriented protocols, while Model 110 functions equally well with either bit- or byte-oriented communications formats. Both instruments offer real-time viewing of data traffic and total system transparency. Data are displayed on an integral 5-inch CRT in both alpha-numeric and hexadecimal format. Larger, auxiliary CRTs may be driven by either instrument.

Model 400 EPISOLVER. This communications analyzer provides all the features of the Model 110 data monitor and also contains significant new test abilities. The EPISOLVER allows independent and concurrent trapping of character sequences in both transmitted and received data. The instrument contains four pages (2K characters) of data storage. Optionally, various system timing measurements, including actual data clock rates and control timing intervals, can be made.

Model 200 EPITAPE. Stores and retrieves both data and system control signals for future analysis. A full tape cartridge stores 23 megabits of datacomm dialog and control status at system speeds to 19,200 bps.

Model 320 EPIBERT. Designed to exercise, test and evaluate modems, data systems, digital microwave links and voice-grade data networks, this bit analyzer has a larger data display capability than any other presently available test set. 10 critical parameters are analyzed for errors and displayed.

Model 430 EPIPRINTER. Converts outputs from either EPIVIEW model or from the EPISOLVER into hard copy for detailed problem analysis and permanent reference. The quiet, reliable non-impact print mechanism precisely copies the monitor screen of data.

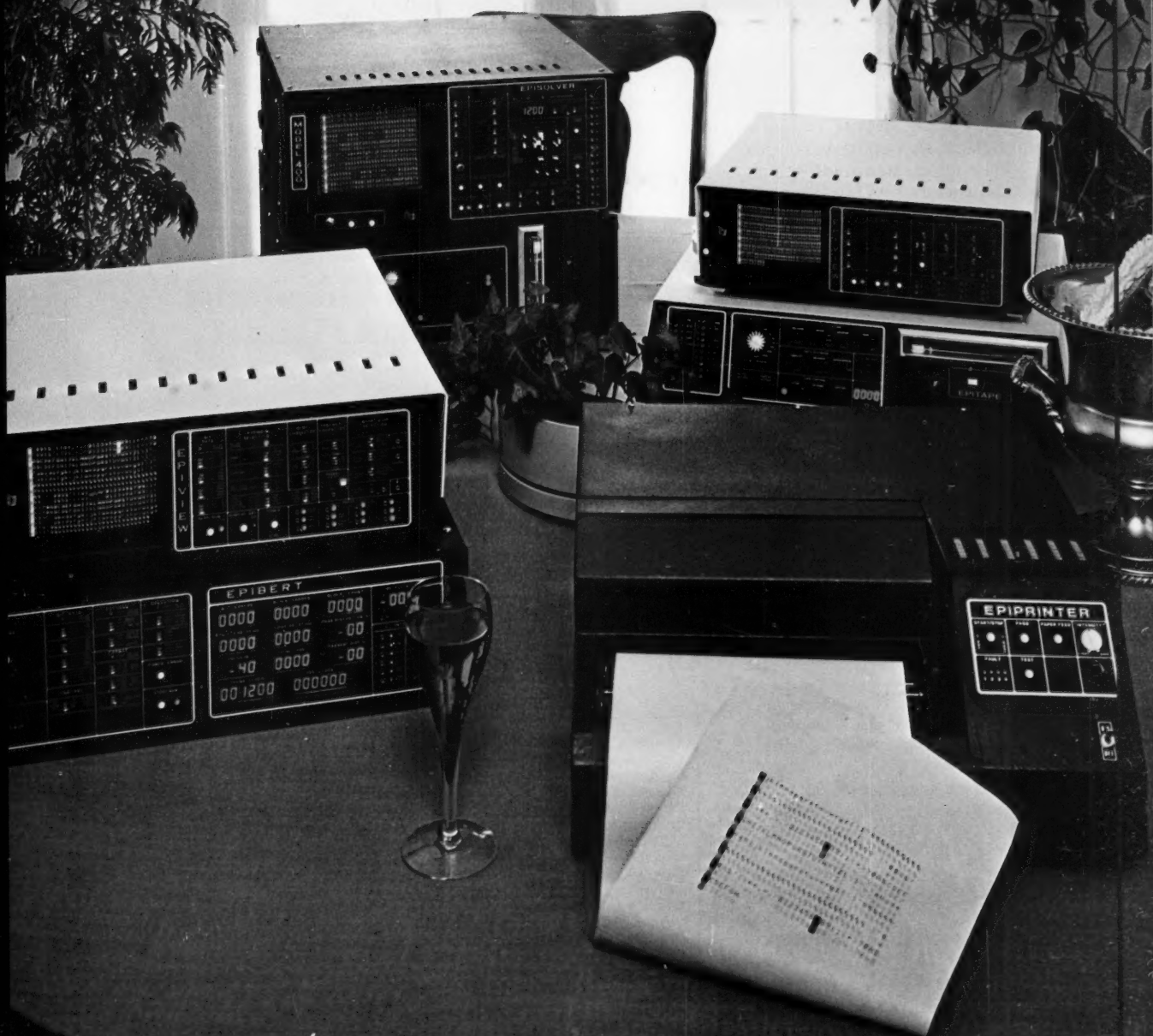
All products are available in both free-standing and rack-mountable enclosures. Select a menu that satisfies your datacomm system's appetite. Ask for technical details, or:

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MENU



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- sample solicitation format plus a compilation of solicitation clauses and forms most frequently used in procurement documents
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- tabulation of Bell System data-set operating characteristics to help you develop a functional modem procurement
- vital facts to determine if special pin cross-connections are required to interface components with existing equipment
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Contents

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A New Standard

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In the 1970s, an international standard was established for packet-switched digital telecommunications. Called "X.25," this standard defined how terminal equipment and digital networks should operate with each other. The standard was very careful in spelling out physical connections, plus link- and packet-level protocols.

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The need for another kind of standard became apparent, one which would provide:

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Distributed Data Processing

In the past year, the most significant distributed data processing (DDP) event was the introduction of IBM's 8100 general-purpose processor. Its importance, however, lies more in the impact it is having on both users and the data processing industry than in its hardware or software engineering.

For users, the importance of the 8100 is the way it is being integrated into IBM's system network architecture (SNA). For the first time, an SNA network need not be hierarchical—an 8100 can talk to other 8100s without the need to go through a 370 host—and for the first time, a remote station in an SNA network can be used to develop and compile programs. Further, an 8100 processor can perform stand-alone processing, something that even IBM's powerful 3790 communications system cannot do. In addition, it offers high-level English language command capability—a DDP necessity—that is automatically translated into Cobol, Fortran, or assembler language.

The 8100, however, is not without its problems. For

example, its 800 to 1,500 nanosecond cycle time is slow, the fastest printer it will support is the 300-line-per-minute, 64-character IBM 3289 Model 3, and there is no true database management system (DBMS). But these shortcomings do not detract from the fact that, from the users' standpoint—especially those legions of already existing IBM customers—the 8100 legitimized the DDP concept. They can now consider implementing a DDP network without worrying about losing the investment they already have in IBM equipment. And, of course, the first-time computer user can get into DDP in a relatively small way without worrying about whether the hardware/software bought today will be compatible with other IBM systems.

Heated competition

But the impact on users is not the only significance of the 8100. It is having far-reaching repercussions on the data processing industry as well. With IBM committed to the DDP market, vendor competition is picking

up at a furious pace. Not only are new systems—geared specifically for DDP—being unveiled, but also already existing DDP products are being upgraded. Some of the new offerings and enhancements in this area include:

- Four-Phase. Billed as an alternative to the 8100, the Cupertino, Calif.-based company introduced the IV/60 and IV/65 in April. An IV/65 accepts up to 24 terminals and boasts a 192-kbyte, 5-Mbyte disk drive. A complete package includes communications applications software, a decimal instruction set, and an operating system that is compatible with Four-Phase's multifunction executive (MPE IV).

Series IV capabilities include stand-alone processing, data retrieval and update, and source data entry. It is also possible to link multiple Four-Phase Series IV units and IBM processors within the same network.

- Digital Systems Corp. The Galaxy/3 can support up to seven CRTs or modems, a 300-line-per-minute printer, and a 25-M-character disk system (one fixed and one movable drive.) Software is compatible with the Walkersville, Md. company's Galaxy/5 offering.

- Burroughs. Finally set to make a serious run at DDP, Burroughs has come out with a comprehensive networking scheme called Burroughs Network Architecture (BNA). Implementation of this architecture does not require the installation of any specialized equipment or a switch to unfamiliar software—because it is compatible with already existing Burroughs data communications and network software.

BNA permits terminal-to-terminal and host-to-host communications. Data communications links may be leased, dialed, or supplied by commercial packet-switching services. The architecture provides a packet switch interface for X.25 protocol and allows any combination of transmission media to be used on any given link.

In addition, Hewlett-Packard, Digital Equipment Corp., and Data General Corp. are all rumored to be preparing communications enhancements for their distributed architectures.

A corollary trend to the number of computer hardware/software products geared specifically for distributed data processing environments is the emergence of the 32-bit minicomputer for DDP applications. During the last year or so, IBM (8100), DEC (VAX/VMS), Prime Computer (450, 550, 650, and 750 processors), and Perkins-Elmer Corp. (3200 Series) have presented 32-bit offerings.

32 vrs 32 bit

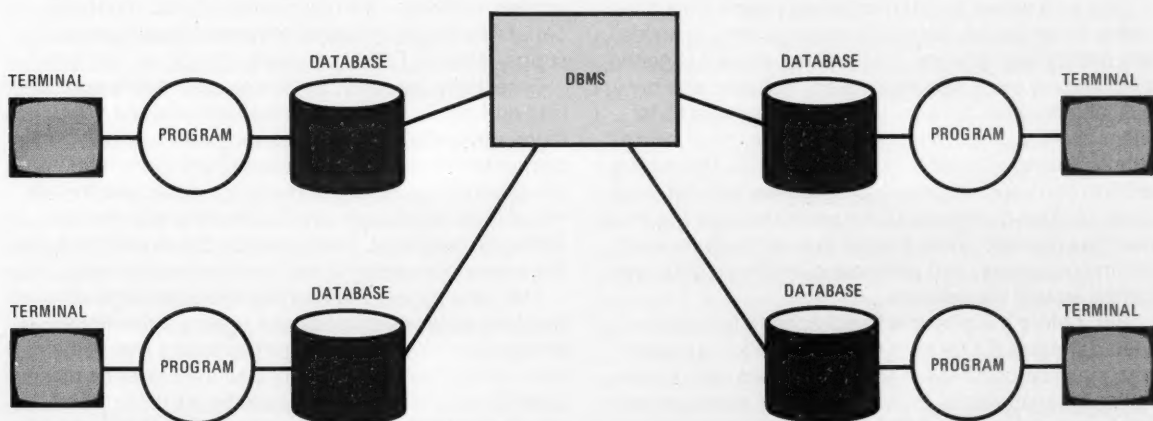
The most obvious, and perhaps least appreciated, difference between typical 32- and 16-bit minicomputers is the significantly greater direct memory addressability of the newer machines, which allows users to run much larger software programs. To illustrate, traditional 16-bit machines run programs as large as 65 kbytes, whereas a typical 32-bit unit starts at 256 kbytes of memory and can be expanded to several million bytes.

The need to address more main memory exists primarily because of the push into network control programming and the subsequent trend in the data communications industry toward things like ACS, SBS, and XTEN. Applications are reaching the point where users may often be required to know how to address more main memory, which is what the 32-bit minicomputer enables them to do.

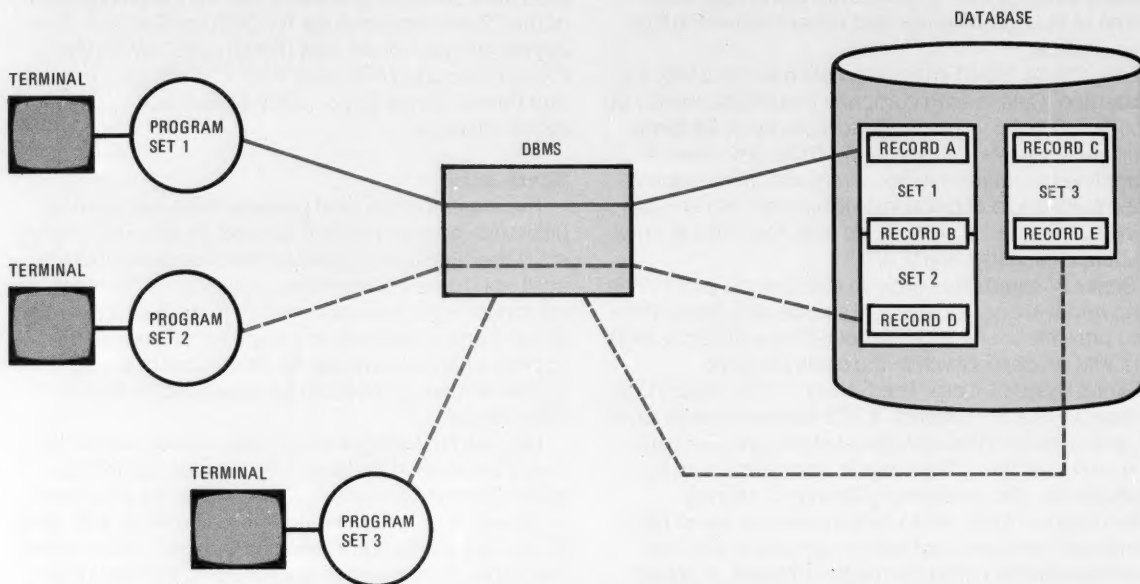
The need for a proper address structure, such as that offered by a 32-bit machine, is something both vendors and users are only now coming to grips with. Users, who have tended to underestimate storage needs—find they have nowhere to go when it is time to upgrade the network. The large address structure provided by the 32-bit minicomputer allows for growth and network stability because the need to restructure software is eliminated.

In short, users need a lot of mass storage. And they need a lot of lines, many buffers, and a direct-addressing capability to get at all the information in those buffers. In such an environment, it is often necessary to handle many different protocols, which calls for a lot

1 Shared distributed databases



2 Central shared database



of coding—coding that should be transparent to the user. A 16-bit machine simply runs out of memory trying to satisfy these requirements.

Beyond that, 32-bit minicomputers provide greater multiplexing capability and offer higher I/O bandwidth.

Still evolving

Since DDP is still an evolving concept, users point out—and most vendors agree—that development work is still necessary. For instance, in some cases, separate product lines from the same vendor do not even communicate with each other. Or they communicate only with the addition of a hefty software conversion package. Another big complaint is that network control software is skimpy, and that the system is so difficult to use that only a programmer could master its idiosyncrasies.

One area where substantial development work still needs to be done is database management. In an ideally distributed network, data resides where it is generated and/or most frequently used. It should also be available to other network users who may need it for other applications. Databases, therefore, must be distributed along with the processing (Fig. 1). This configuration can improve processor response time for local users, reduce communications costs because the local user has to make fewer queries to a remotely located central processor, and eliminate or minimize data replication around the network.

But, before it is possible to advance to the distributed database (DDB) level of sophistication a radical change must occur in the way companies and organizations manage data. Present database management packages are based on the central computer concept. That is, all data is stored in a central database. Further,

the data is organized by application—meaning users have little or no flexibility in the way data is accessed. Then too, though some DBMSs permit sharing of common data (Fig. 2), in most cases commonly used data must be replicated for each application (Fig. 3).

Replicating data eats up memory and creates problems when data is added, deleted, or revised. The reason: There must be a method to ensure that appropriate changes are made to all applications programs with which the data relates.

More sophistication

To be sure, the DBMS market is starting to heat up somewhat with the majors—such as Cincom, Cullinane, and Tandem—all adding to the sophistication of their products in the past year. Among the improvements: The debuting of more sophisticated database access methods—including some shared database capability and an increase in the number of processors supportable by DBMS software.

Essentially, however, databases are mainly centralized and continue to be applications oriented. What's more, many database access methods now being implemented incorporate directories which contain data descriptions that apply to the entire database, to individual local databases, and to the data required by individual programs. Users employ the directory much like a telephone book to retrieve the desired data.

This data access method has the advantage of breaking data organization out of the applications straitjacket. However, directories require that users know what they're looking for and they must be updated as data is added or deleted—a problem that can be extremely tricky if multiple directories and widely dispersed departments are involved. Ideally, data

should be organized relationally or logically, by content or value, rather than by physical address. For example, a database could be organized into tables of columns that contain related records. The table could be EMPLOYEE, a column heading could be WELDER, and the column could contain the names of all the welders in a company. The column heading could be expanded to include other related categories to EMPLOYEE such as salary and address. By employing the appropriate key identification words, users are relieved of having to know where any particular data item resides, and more freedom in the way queries are posed to the database is permitted.

Relational research

So far, no one has a commercially available relational database, though many vendors are researching the concept. IBM is conducting extensive research on a relational model called System R at its San Jose, Calif. facility; and Computer Corp. of America, Boston, Mass., has incorporated a relational approach in a distributed database prototype it's developing under auspices of a Department of Defense contract.

But before DDBs with relationally organized data become commercially available, methods must be devised to efficiently handle certain communications problems that don't exist, or have negligible impact in the centralized environment. Two cases in point:

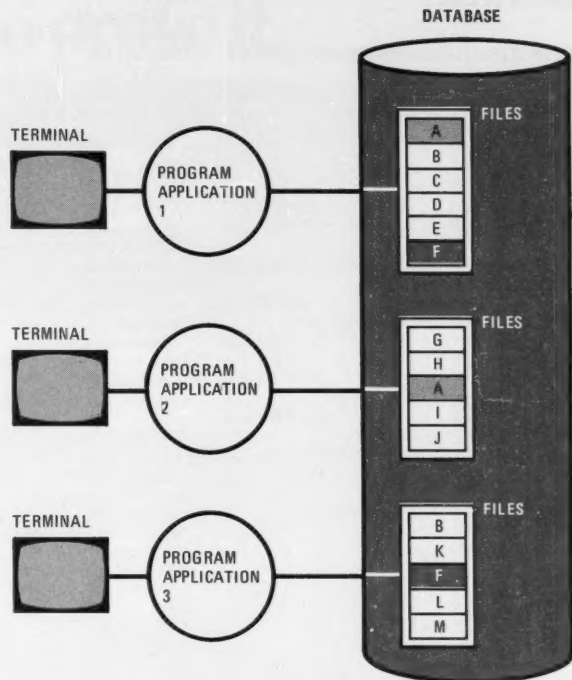
- **Deadlock.** This situation occurs when, say, a processor at node 1 has one data element locked and wants access to a data element locked in node 2. At the same time, node 2 is trying to access the locked file at node 1. Each node may wait for the other to release its lock. This situation will produce a deadlock or deadly embrace condition.
- **Recovery.** Distributed databases, like their centralized counterparts, must be provided with a recovery mechanism. Database updates that are only partially completed at the time of failure must be reversed, and programs restarted if required. In a distributed database configuration, it is possible for the program of a computing facility with updates outstanding at multiple locations to fail. Cooperating actions must be initiated and synchronized—sometimes linking records that may reside in several different remotely located node processors.

Taken together, from a DDP view, the past 12 months can be described as a watershed year. For many users DDP was legitimized as a viable data processing concept. At the same time, many users began to understand the long-term benefits and limitations of DDP—it is not the answer for everyone.

In so doing, users have begun to realize, too, how much they have to master before they can even contemplate some of the more esoteric applications of distributed data processing. And, because of these revelations, increasing numbers of them are telling vendors to stop talking about what they're going to do for users in the future and to pay attention to solving today's problems.

Consequently, users are approaching the distribute-or-not-to-distribute processing decision with a more

3 Applications-oriented database



educated and pragmatic attitude about what they want to do and how they want to do it. ■

For more on distributed data processing see the following Data Communications articles:

1. "Get Prepared for the Next Step in DDP," Charles R. Dooley, April 1979, p. 41. An overview of state-of-the-art distributed database management, with descriptions of available products and what they can do. Insights also are provided about where database management is going and what it will mean to users.
2. "The Micro, Mini, and Mainframe in a DDP Net," Terry D. Pardoe, Nov. 1978, p. 57. Discusses capabilities and limitations of each processor class within the DDP context. The objective: To help data communications managers design better DDP networks.
3. "Distributed Data Processing: Where We Are Now," Hal B. Becker, Aug. 1978, p. 77. Puts DDP in perspective in terms of its origins and evolution; advantages and disadvantages. Defines distributed data processing's primary functional elements: information, database, and network processing.
4. "Eight Factors Aid Network Design and User Interface," Charles H. Ruger, Aug. 1977, p. 53. Identifies and analyzes eight factors which must be taken into account in designing and implementing a distributed data processing network.
5. "Distributed Processing Solves Mainframe Problems," Arthur Lynch, Nov./Dec. 1976, p. 17. Discusses DDP network organization vis-a-vis central and satellite configurations. Details include database elements.

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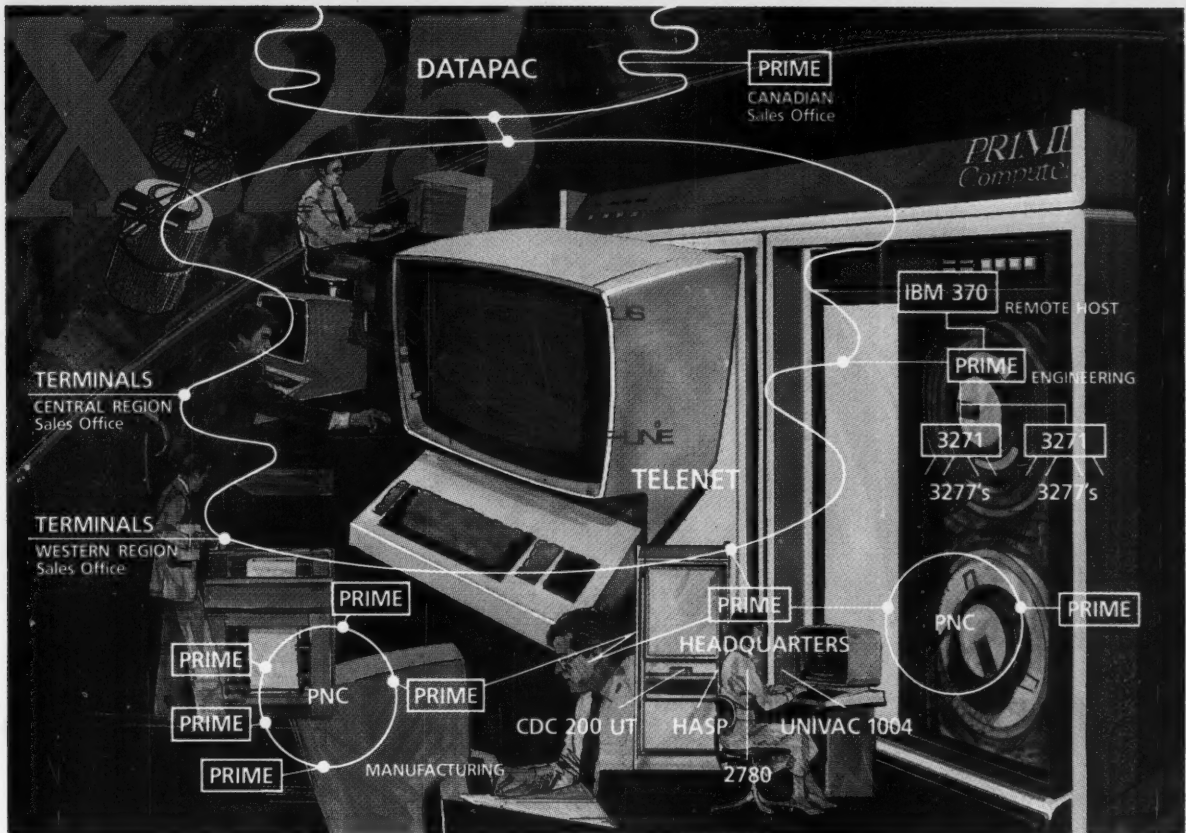
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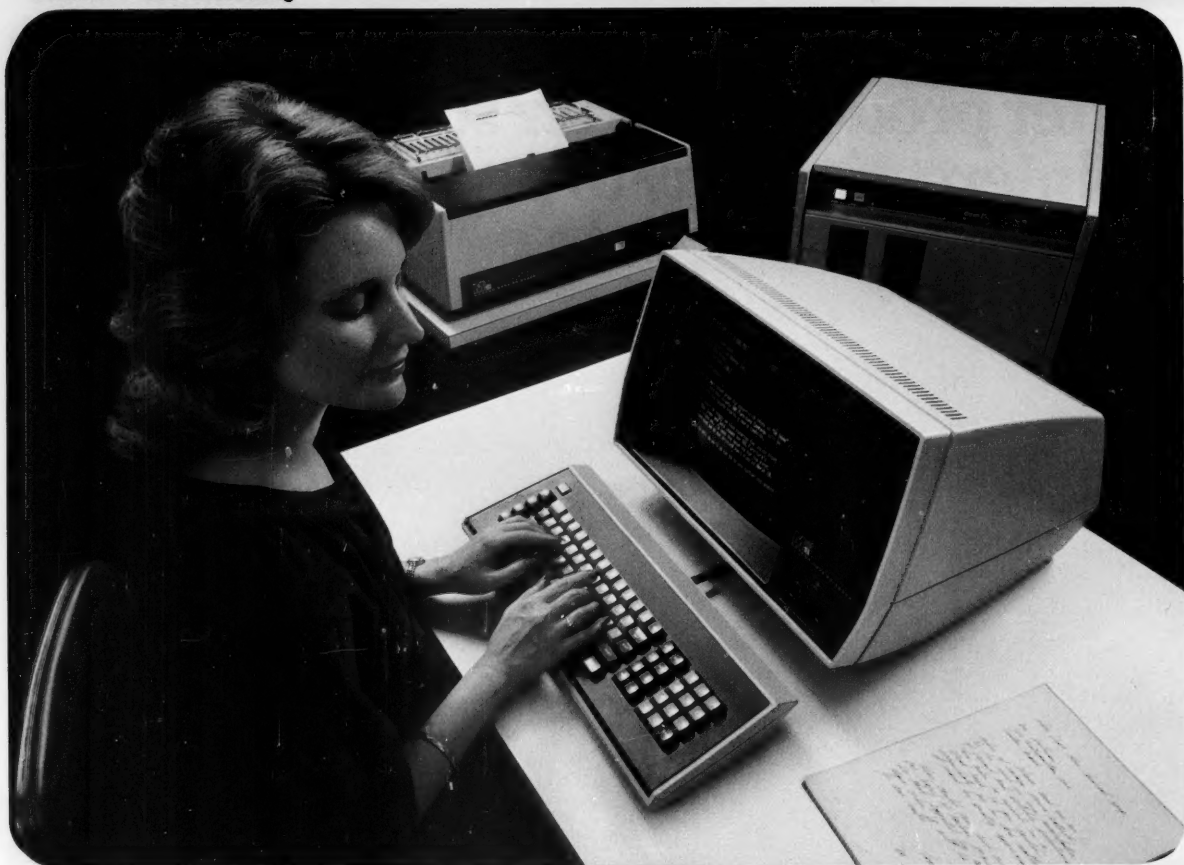
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Mailway links Wang's systems — VS Computer/Word Processing Integrated Information Systems, and Wang's standard Word Processing and Office Information Systems — to one another in an economical communications network regardless of the systems' locations.

By using existing Wang telecommunications protocols, Mailway can be added to most Wang word processing installations. Mailway provides the management and control support for distributing documents electronically between sites.

Information that is created on a Wang workstation is automatically routed to its destination through the use of a menu and a mailing directory. The directory is an electronic address book which lists the names of those persons in an organization, or those people outside, with whom there is frequent communication.

Easy as licking a stamp.

Once the distribution is selected from the directory, Mailway routes it without operator intervention. An autocall feature means that your operators don't even have to dial the



telephone! In Wang multi-terminal systems, the information is rapidly transmitted in background mode, while operators may be using the workstations for other functions. When the information reaches its destination, a recipient may read the mail from the workstation's CRT or have it printed out. Or, if desired, a printer may print the message immediately upon its receipt without operator intervention.

A mail log keeps track of mail sent and information pertinent to it. It includes the

sender's name and location, document title, destination, dates sent and received, the date a reply is required, and the date the reply

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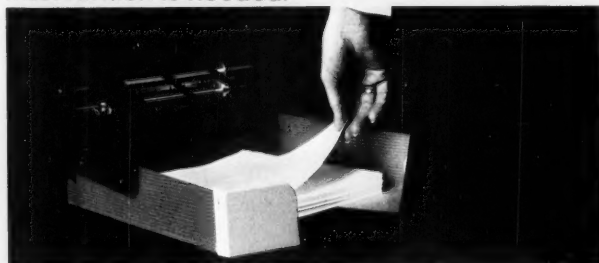
Fast delivery Mailway allows your information to keep pace with today's fast moving working environment. Your documents achieve maximum impact because of their timely delivery.

Compare conventional mail service taking from one to three days to less than one

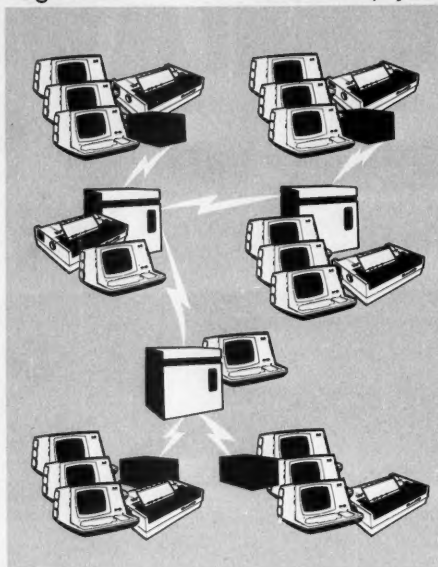
minute transmission of a one page letter or report.

Cost efficient Postage, internal handling and distribution costs are significantly reduced. Your organization makes maximum use of its present Wang equipment by extending its functionality. Mailway is also less expensive than other methods of rapid electronic distribution. And, the typewriter-like quality of the printed message is the same fine quality as the original document.

Easy to use Simple menus guide operators. Mailway's autocall, directory and mail log features automatically route and keep track of information. No operator intervention is needed.



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Datapoint just opened a local service office in Lafayette, Louisiana. It's one of 42 new ones we opened this year.

That brings the total to 138 and places our customer support personnel as close as possible to the people who need them...whether they're in Lafayette or Los Angeles.

To support all the new offices, we've increased our force of Customer Service Representatives by nearly 50%, to 665. They are trained to service Datapoint systems.

In addition to the supply of spare parts a CSR carries, we've expanded our parts supply system to 275 drop points. Of those, 25 are major parts centers.

Call one number, 24 hours of any day.

There are 42 people in our Customer Support Center in San Antonio awaiting calls and available seven days a week, 24 hours a day. When customers need service, they call one toll-free number. We find the CSR nearest the customer and usually have them on the telephone with each other within an hour.

The entire system is controlled by our own DATASHARE®, a sophisticated data processing and information retrieval system. Our own Infoswitch® Automatic Call Distributor takes care of all incoming calls so that customers receive the quickest possible response.

All the equipment is our own, naturally.

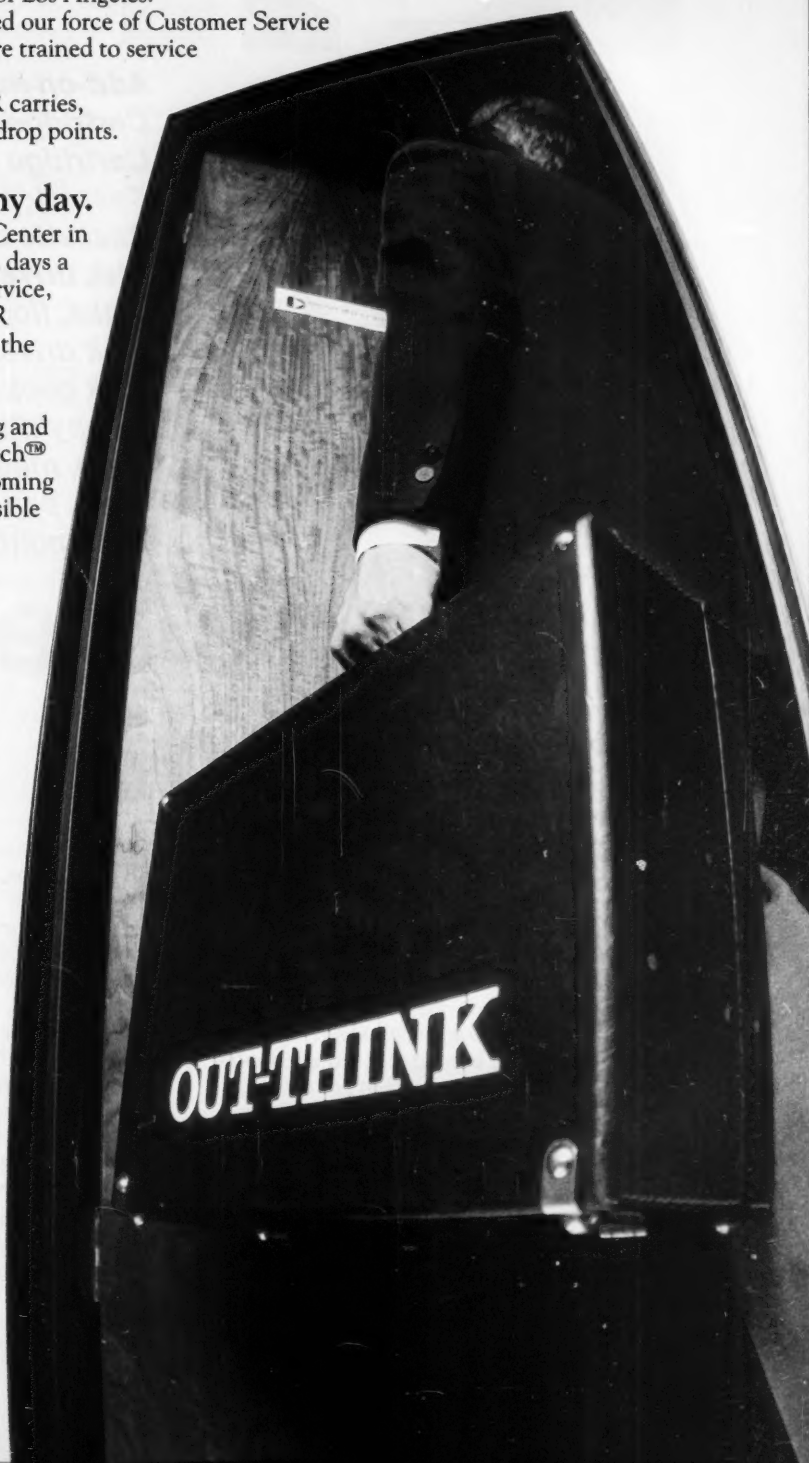
We don't forget our customers. They don't forget us.

Customers may choose Datapoint computers for any number of reasons—cost, ease of use, flexibility—but they soon learn our customer support is as good a reason as any. Our growth has come largely from the growth of our customers. They keep coming back for more. They don't forget us because we haven't forgotten them.

Providing the kind of customer support Datapoint believes its customers deserve requires a huge commitment in manpower, facilities and money. The commitment has been made—it's a matter of Datapoint's corporate policy. And it's just one of the ways we're out-thinking our competition to help our customers out-think theirs.

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Storage Devices and Media

Special function terminals—called electronic mailboxes—which provide functions ranging from simple bulk storage to automatic forms data entry have made significant headway this past year.

Sykes Datatronics, Anderson Jacobson, Western Telematic, Mitron Digicom, and American Telephone & Telegraph, to name just a few, are in the business of supplying electronic mailboxes. The devices are usually configured around disk storage media, and often contain additional circuitry to accomplish such functions as polling and electronic editing.

The mailboxes most frequently attach to a user's terminal through an RS-232-C interface and change the terminal into a data entry station. Standard business forms and user-defined formats are set up on the mailbox to simplify data entry. Most require no intelligence in the user's terminal and, through either a microprocessor or a microcomputer, provide all the intelligence necessary for forms data entry, validation, diskette storage, and data transmission.

Firmware built into Sykes' Comm-Stor III electronic mailbox, for instance, provides an immediate enhancement of terminals by adding such capabilities as arithmetic operations up to 16 digits, automatic table look-up and fill-in of data fields, checking of data ranges, validation of all data entered, user-defined form layouts, and data exchange with the IBM 3740 line of equipment.

Each Comm-Stor III has communications ports for connection to a local terminal and a modem. A third port is optional for connection to a local printer. In total, 12K bytes of random-access memory are available for a user's forms storage, and the system comes with either a single or dual floppy diskette drive.

For hard-copy terminals, data entry is on a line-by-line basis, but the unit still treats all information as a whole form. Comm-Stor III also features an optional IBM 3740 format program, which converts data recorded on diskettes in ASCII into EBCDIC, and automatically writes appropriate data-set labels for direct

reading by the IBM 3740 equipment.

This and other electronic mailboxes include a command set of data communications and file management functions. These commands simplify data entry, storage, and transmission applications. The mailboxes are usually available with either a single or dual floppy diskette drive with about from 4K to 40K bytes of user-programmable memory, and communications ports for connection to an asynchronous RS-232-C terminal, printer, or modem.

Data entered into a mailbox is stored on diskettes as files, with individual file names automatically cataloged in a directory. After receiving data from a terminal at low speed, an unattended mailbox can send batched data at high speeds over data communications lines and can interact with most asynchronous communications protocols.

For real-time applications, the units use a data buffering system. Data is automatically buffered until a program requests it. Units used for applications that require responses to real-time events, have a real-time clock and a special priority interrupt structure.

Cost cutters

In general, electronic mailboxes are employed to save communications costs. This is possible because they perform text-editing functions locally and send only the minimum data necessary for a transaction. Tabbing and sorting of local files are also possible. Mailboxes that operate up to 9.6 kbit/s on leased lines and up to 1.2 kbit/s on switched lines are available today. The user in the market for an electronic mailbox has a number of different features to choose from. At a minimum, look for these:

- Full-duplex communications capability
- Compatibility with widely used modems
- Operation with private and switched networks
- Compatibility with widely employed link protocols
- Familiar code (ASCII, EBCDIC, etc)

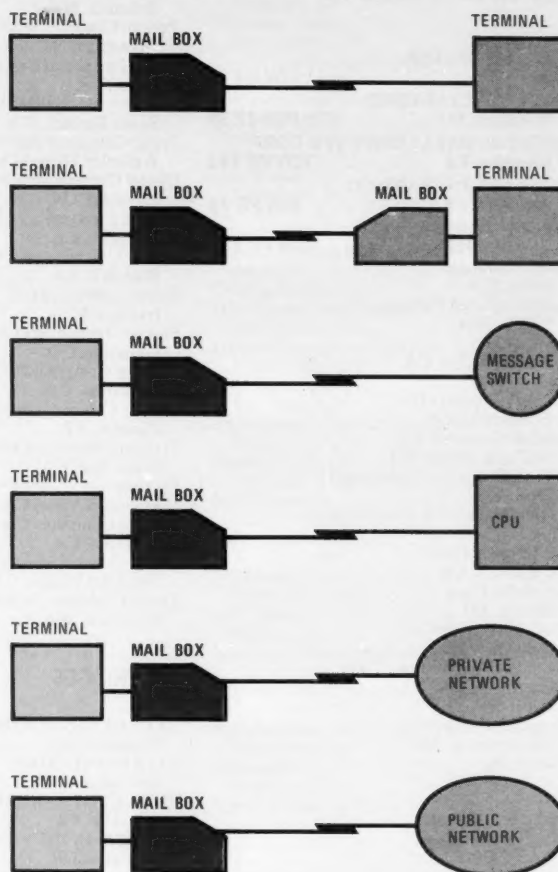
Some other features that are not essential, but are worthwhile if available at a reasonable cost include:

- Buffer overload alarm and protection
- Answer-back for automatic polling
- Full editing capability
- Automatic data and time record for each message
- Single- and multiple-address capability
- Simple expansion scheme for add-on memory
- Simultaneous send-and-receive editing capability
- Format conversion
- Operator prompting messages
- Both fixed- and variable-length-message-handling capabilities

New uses

There are many applications for electronic mailboxes in today's environment. Principal among these are forms or order-type data entry systems. If the mailbox contains editing features, this kind of data entry—where only limited data is required to complete an order—is enhanced. A data-input operator with such a mailbox can inspect the data to be transmitted before actual communications takes place. The result is re-

Mailbox application



duced costs because of fewer errors and retransmissions.

Remote-data collection users have also found mailboxes attractive. Here the device is used in much the same way as conventional bulk storage, except the mailbox can be used in conjunction with a data terminal and provide additional function.

One interesting application that recently evolved for electronic mailboxes is an interconnection involving a PBX and a high-volume mailbox. Network logging and cost programs can be accomplished on even the simplest of PBXs in this way. ■

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Micro Communications Corp
Waltham, MA
Microcomputer Systems Corp
Sunnyvale, CA
Mohawk Data Sciences Corp
Parsippany, NJ
NCR Corp
Dayton, OH
Northern Telecom Systems Corp
Minnetonka, MN
Olivetti Corp of America
New York, NY
Pertec Computer Corp
Peripherals Div
Chatsworth, CA
Perkin-Elmer
Oceanport, NJ
Plessey Peripheral Systems
Irvine, CA
Qantel Corporation
Hayward, CA
Rianda Electronics Ltd
Anaheim, CA
Royal Business Machines Inc
Hartford, CT
Sperry Univac
Blue Bell, PA
Sperry Univac, MCO
Irvine, CA
Storage Technology Corp
Louisville, CO
Tandberg Data Inc
San Diego, CA
Tandem Computers
Cupertino, CA
Tektronix Inc
Beaverton, OR
Teletype Corp
Skokie, IL
Texas Instruments
Dig Sys Div
Houston, TX
Three Phoenix Co
Phoenix, AZ
Tri Data
Mountain View, CA
Western Peripherals Inc
Anaheim, CA

CASSETTES

DATAPPOINT CORP
San Antonio, TX ADV PG 107
American Used Computer Co
Boston, MA
Ampex Corp
Redwood City, CA
Aspen Ribbons
Boulder, CO
BASF Systems
Bedford, MA
Boston Financial & Equity Corp
Boston, MA
Burroughs Corp
Detroit, MI
CD Johnson/Assoc Ltd
Ottawa, ON
ComData Corp
Skokie, IL

Continental Resources Inc
Bedford, MA
Crown Communications Inc
Dallas, TX
Datapoint Corp
San Antonio, TX
Digital Equipment Corporation
Marlboro, MA
Electronic Interface Assoc Inc
New York, NY
HICO-Horizons International Co
Menlo Park, CA
Inmac
Santa Clara, CA
International Computer Products
Dallas, TX
Keyline Inc
Santa Clara, CA
Kybe Corp
Waltham, MA
Maxell Corporation of America
Moonachie, NJ
Memodyne Corp
Needham Heights, MA
MFE Corp
Salem, NH
Micro Communications Corp
Waltham, MA
MTI Sales Corp
Great Neck, NY
NCR Corp
Dayton, OH
Olivetti Corp of America
New York, NY
Polymorphic Systems
Santa Barbara, CA
Selecterm Inc
Wakefield, MA
Sperry Univac
Blue Bell, PA
Telex Marketing Company
Culver City, CA
Tel-Tex Inc
Houston, TX
Terminal Rentals Inc
Orange, CA
Terminal Systems Inc
N Hollywood, CA
Trendata Corp
Sunnyvale, CA
Verbatim Corp
Sunnyvale, CA

CASSETTE DRIVES

ALANTHUS DATA COMMUNICATIONS CORP
Rockville, MD ADV PG 134
DATAPPOINT CORP
San Antonio, TX ADV PG 107
Alanthus Data Communications Corp
Rockville, MD
American Used Computer Co
Boston, MA
Boston Financial & Equity Corp
Boston, MA
Braemer Computer Devices Inc
Burnsville, MN
Burroughs Corp
Detroit, MI
Carterfone Communications Corp
Dallas, TX
CD Johnson/Assoc Ltd
Ottawa, ON
ComData Corp
Skokie, IL
Comten Inc
St Paul, MN
Crown Communications Inc
Dallas, TX
Custom Terminals Corp
Hauppauge, NY

Data Communications Corp
Memphis, TN
Datapoint Corp
San Antonio, TX
Digital Equipment Corporation
Marlboro, MA
Electronic Interface Assoc Inc
New York, NY
Electronic Processors Inc
Englewood, CO
Epic Data Corp
Richmond, BC
Facit Inc
Greenwich, CT
General Automation
Anaheim, CA
General Electric Co
Data Comm Prod Dept
Waynesboro, VA
HICO-Horizons International Co
Menlo Park, CA
Interdyne Co
Van Nuys, CA
International Computer Products
Dallas, TX
Memodyne Corp
Needham Heights, MA
MFE Corp
Salem, NH
Micro Communications Corp
Waltham, MA
MTI Sales Corp
Great Neck, NY
NCR Corp
Dayton, OH
Northern Telecom Systems Corp
Minnetonka, MN
Olivetti Corp of America
New York, NY
Perkin-Elmer
Oceanport, NJ
Selecterm Inc
Wakefield, MA
Sperry Univac
Blue Bell, PA
Techtran Industries
Rochester, NY
Terminal Systems Inc
N Hollywood, CA
Texas Instruments
Dig Sys Div
Houston, TX
Trendata Corp
Sunnyvale, CA
Vector Graphic Inc
Westlake Village, CA

DISC DRIVES, FLOPPY

ALANTHUS DATA COMMUNICATIONS CORP
Rockville, MD ADV PG 134
ANDERSON JACOBSON
San Jose, CA ADV PG 140
APPLIED DATA COMMUNICATIONS
Tustin, CA ADV PG 74
DATA ACCESS SYSTEMS INC
Mountain Lakes, NJ ADV PG 141
DATA GENERAL CORP
Westboro, MA ADV PGS 37,38
DATAPPOINT CORP
San Antonio, TX ADV PG 107
DOCUMENTATION INC
Melbourne, FL ADV PG 142
HEWLETT-PACKARD CO
Palo Alto, CA ADV PG 79
TEKTRONIX INC
Beaverton, OR ADV PGS 90,91

For further catalog information, turn to
UpDate Service Card, page 201.

Advanced Electronics Design Inc
Sunnyvale, CA
Alanthus Data Communications Corp
Rockville, MD
American Used Computer Co
Boston, MA
AM Jacquard Systems
Santa Monica, CA
Anderson Jacobson
San Jose, CA
Applied Data Communications
Tustin, CA
Applied Systems Corp
St Claire Shores, MI
BASF Systems
Bedford, MA
Billings Computer Corporation
Provo, UT
Boston Financial & Equity Corp
Boston, MA
The Braegen Corp
Cupertino, CA
Burroughs Corp
Detroit, MI
Carterfone Communications Corp
Dallas, TX
CD Johnson/Assoc Ltd
Ottawa, ON
Century Data Systems Inc A Xerox Co
Anaheim, CA
C & L Terminals Inc
Portland, OR
CMC Marketing Corp
Houston, TX
Comark Corp
Waltham, MA
ComData Corp
Skokie, IL
Computer Automation
Naked Mini Div
Irvine, CA
Computer Products Supply Co
Gaithersburg, MD
Comten Inc
St Paul, MN
Continental Resources Inc
Bedford, MA
Crown Communications Inc
Dallas, TX
Custom Terminals Corp
Hauppauge, NY
Data Access Systems Inc
Mountain Lakes, NJ
Data Communications Corp
Memphis, TN
Data Equipment Inc
Sunnyvale, CA
Data General Corp
Westboro, MA
Datapoint Corp
San Antonio, TX
Data Terminals & Communications
Campbell, CA
Decitek Div
Jamesbury Corp
Westboro, MA
Delta Data Systems
Cornwell Heights, PA
Digicom Data Products Inc.
San Jose, CA
Digital Equipment Corporation
Marlboro, MA
DMC Div
Cetec Corp
Santa Clara, CA
Dobson Woodbury Research Inc
Salt Lake City, UT
Documation Inc
Melbourne, FL
Electronic Interface Assoc Inc
New York, NY

Epic Data Corp
Richmond, BC
Ex-Cell-O Remex Div
Irvine, CA
First Computer Corp
Westmont, IL
Garyco Data Systems Inc
Seattle, WA
General Automation
Anaheim, CA
General Electric Co
Data Comm Prod Dept
Waynesboro, VA
General Telephone Co. of the Southwest
San Angelo, TX
General Telephone Co of Wisconsin
Sun Prairie, WI
GNAT Computers, Inc.
San Diego, CA
Hands-On Terminals Inc
Portland, OR
Hewlett-Packard Co
Palo Alto, CA
Hitachi America Ltd
Computer Sales & Service Div
San Francisco, CA
Honeywell Information Systems
Waltham, MA
Incoterm Corp
A Subsidiary of Honeywell Inc
Wellesley Hills, MA
Intelligent Systems Corp
Norcross, GA
International Computer Products
Dallas, TX
Lantor Inc
Playa Del Rey, CA
Logical Machine Corporation
Sunnyvale, CA
Megadata Corp
Bohemia, NY
Memorex Corp
Cupertino, CA
MFE Corp
Salem, NH
Micro Peripherals Inc
Woodland Hills, CA
Micropolis Corp
Canoga Park, CA
Modular Computer Systems
Fort Lauderdale, FL
MTI Sales Corp
Great Neck, NY
NCR Corp
Dayton, OH
Northern Telecom Systems Corp
Minnetonka, MN
Olivetti Corp of America
New York, NY
Pertec Computer Corp
Peripherals Div
Chatsworth, CA
Per Sci Inc
Los Angeles, CA
Pertec Computer Corp
CSD Div
Los Angeles, CA
Phone 1 Inc
Rockford, IL
Plessey Peripheral Systems
Irvine, CA
Polymorphic Systems
Santa Barbara, CA
Qantel Corporation
Hayward, CA
Qume Corp
San Jose, CA
Rental Electronics Inc
Palo Alto, CA
Rolm Corp
Santa Clara, CA

Royal Business Machines Inc
Hartford, CT
Shugart Assoc
Sunnyvale, CA
Southwestern Bell Telephone Co
St Louis, MO
Sperry Univac
Blue Bell, PA
Sperry Univac, MCO
Irvine, CA
System Industries
Sunnyvale, CA
Techtran Industries
Rochester, NY
Tektronix Inc
Beaverton, OR
Telefile Computer Prod Inc
Phoenix, AZ
Telaray Div
Research Inc
Minneapolis, MN
Terminal Data Corp
Rockville, MD
Terminal Specialties Inc
Salt Lake City, UT
Terminal Systems Inc
N Hollywood, CA
Texas Instruments
Dig Sys Div
Houston, TX
Trendata Corp
Sunnyvale, CA
Tri Data
Mountain View, CA
Vector Graphic Inc
Westlake Village, CA
W A Brown Instruments
Orlando, FL
Western Telematic Inc
Santa Ana, CA
Xebec Systems
Santa Clara, CA
Xycon Computer Systems
Arlington, WA

DISCS, FLOPPY

ANDERSON JACOBSON
San Jose, CA **ADV PG 140**
TEKTRONIX INC
Beaverton, OR **ADV PGS 90,91**
AM Jacquard Systems
Santa Monica, CA
Ampex Corp
Redwood City, CA
Anderson Jacobson
San Jose, CA
Aspen Ribbons
Boulder, CO
BASF Systems
Bedford, MA
Bell System
AT&T Assoc Telephone Co
New York, NY
CD Johnson/Assoc Ltd
Ottawa, ON
Compugraphic Corp
Wilmington, MA
Computer Products Supply Co
Gaithersburg, MD
Crown Communications Inc
Dallas, TX
Data Equipment Inc
Sunnyvale, CA
Digicom Data Products Inc.
San Jose, CA
Digital Equipment Corporation
Marlboro, MA
Electronic Interface Assoc Inc
New York, NY
First Computer Corp
Westmont, IL

Heath Co
Benton Harbor, MI
Inmac
Santa Clara, CA
Keyline Inc
Santa Clara, CA
Kybe Corp
Waltham, MA
Lantor Inc
Playa Del Rey, CA
Logical Machine Corporation
Sunnyvale, CA
Maxell Corporation of America
Moonachie, NJ
Memorex Corp
Cupertino, CA
MTI Sales Corp
Great Neck, NY
Olivetti Corp of America
New York, NY
Polymorphic Systems
Santa Barbara, CA
Selecterm Inc
Wakefield, MA
Sperry Univac, MCO
Irvine, CA
Tektronix Inc
Beaverton, OR
Telefile Computer Prod Inc
Phoenix, AZ
Tel-Tex Inc
Houston, TX
Terminal Systems Inc
N Hollywood, CA
Verbatim Corp
Sunnyvale, CA
Vydec Inc
Florham Park, NJ
Western Telematic Inc
Santa Ana, CA
Wright Line Inc
Worcester, MA

DISC DRIVES, LARGE

DATA GENERAL CORP
Westboro, MA **ADV PGS 37,38**
DATAPoint CORP
San Antonio, TX **ADV PG 107**
HEWLETT-PACKARD CO
Palo Alto, CA **ADV PG 79**
PRIME COMPUTER INC
Wellesley Hills, MA **ADV PG 103**
TEKTRONIX INC
Beaverton, OR **ADV PGS 90,91**
Advanced Electronics Design Inc
Sunnyvale, CA
American Used Computer Co
Boston, MA
AM Jacquard Systems
Santa Monica, CA
Ampex Corp
Redwood City, CA
Ampex Corp
Memory Products Div
El Segundo, CA
Billings Computer Corporation
Provo, UT
Boston Financial & Equity Corp
Boston, MA
The Braegen Corp
Cupertino, CA
Burroughs Corp
Detroit, MI
CD Johnson/Assoc Ltd
Ottawa, ON
Century Data Systems Inc A Xerox Co
Anaheim, CA
CMC Marketing Corp
Houston, TX
Comark Corp
Waltham, MA

Computer Automation
Naked Mini Div
Irvine, CA
Computer Products Supply Co
Gaithersburg, MD
Comten Inc
St Paul, MN
Data Communications Corp
Memphis, TN
Data Equipment Inc
Sunnyvale, CA
Data General Corp
Westboro, MA
DatagraphiX Inc
San Diego, CA
Datapoint Corp
San Antonio, TX
Data Terminals & Communications
Campbell, CA
Datum Inc
Anaheim, CA
Diablo Systems Inc A Xerox Co
Hayward, CA
Digital Development Corp
San Diego, CA
Digital Equipment Corporation
Marlboro, MA
Digital Systems Corp
Walkersville, MD
Diva Inc
Eatontown, NJ
EMM Peripheral Prod Div
San Jose, CA
First Computer Corp
Westmont, IL
General Automation
Anaheim, CA
Hewlett-Packard Co
Palo Alto, CA
Hitachi America Ltd
Computer Sales & Service Div
San Francisco, CA
Honeywell Information Systems
Waltham, MA
Incoterm Corp
A Subsidiary of Honeywell Inc
Wellesley Hills, MA
International Computer Products
Dallas, TX
Lantor Inc
Playa Del Rey, CA
Logical Machine Corporation
Sunnyvale, CA
Megadata Corp
Bohemia, NY
Memorex Corp
Cupertino, CA
Microcomputer Systems Corp
Sunnyvale, CA
Mini Computer Systems
Anaheim, CA
Modular Computer Systems
Fort Lauderdale, FL
NCR Corp
Dayton, OH
NEC Information Systems Inc
Lexington, MA
Northern Telecom Systems Corp
Minnetonka, MN
Okidata Corp
Mt Laurel, NJ
Olivetti Corp of America
New York, NY
Perc Computer Corp
Peripherals Div
Chatsworth, CA
Perkin-Elmer
Oceanport, NJ
Perkin Elmer
Memory Products Div
Garden Grove, CA

Perc Computer Corp
CSD Div
Los Angeles, CA
Plessy Peripheral Systems
Irvine, CA
Prime Computer Inc
Wellesley Hills, MA
Qantel Corporation
Hayward, CA
Rianda Electronics Ltd
Anaheim, CA
Royal Business Machines Inc
Hartford, CT
Shugart Assoc
Sunnyvale, CA
Sperry Univac, MCO
Irvine, CA
Storage Technology Corp
Louisville, CO
Tandem Computers
Cupertino, CA
Tektronix Inc
Beaverton, OR
Telefile Computer Prod Inc
Phoenix, AZ
Unicom Computer Corporation
Sausalito, CA
Vector Graphic Inc
Westlake Village, CA
Vermont Research Corp
North Springfield, CT
Xebec Systems
Santa Clara, CA
Xycon Computer Systems
Arlington, WA

DISC PACKS

PRIME COMPUTER INC
Wellesley Hills, MA **ADV PG 103**
TEKTRONIX INC
Beaverton, OR **ADV PGS 90,91**
Aspen Ribbons
Boulder, CO
BASF Systems
Bedford, MA
Burroughs Corp
Detroit, MI
Computer-Link Corp
Burlington, MA
Computer Products Supply Co
Gaithersburg, MD
Digital Equipment Corporation
Marlboro, MA
EMM Peripheral Prod Div
San Jose, CA
First Computer Corp
Westmont, IL
Hitachi America Ltd
Computer Sales & Service Div
San Francisco, CA
Inmac
Santa Clara, CA
Lantor Inc
Playa Del Rey, CA
Logical Machine Corporation
Sunnyvale, CA
Memorex Corp
Cupertino, CA
Olivetti Corp of America
New York, NY
Prime Computer Inc
Wellesley Hills, MA
Sperry Univac, MCO
Irvine, CA
Tektronix Inc
Beaverton, OR

To find local sales offices of companies, turn to **Vendor Directory, page 301.**

Telefile Computer Prod Inc
Phoenix, AZ
Wright Line Inc
Worcester, MA

FLOPPY DISC RECORDERS

ANDERSON JACOBSON
San Jose, CA **ADV PG 140**
SYKES DATATRONICS
Rochester, NY **ADV PG 139**
Anderson Jacobson
San Jose, CA
Digicom Data Products Inc.
San Jose, CA
MFE Corp
Salem, NH
Olivetti Corp of America
New York, NY
Sykes Datatronics
Rochester, NY
Tri Data
Mountain View, CA
Western Telematic Inc
Santa Ana, CA

TAPE, MAGNETIC

DATA GENERAL CORP
Westboro, MA **ADV PGS 37,38**
DATAPOINT CORP
San Antonio, TX **ADV PG 107**
PRIME COMPUTER INC
Wellesley Hills, MA **ADV PG 103**
SIEMENS CORP
Iselin, NJ **ADV PGS 130,131**
TEKTRONIX INC
Beaverton, OR **ADV PGS 90,91**
American Used Computer Co
Boston, MA
Aspen Ribbons
Boulder, CO
BASF Systems
Bedford, MA
Boston Financial & Equity Corp
Boston, MA
Burroughs Corp
Detroit, MI
Computer-Link Corp
Burlington, MA
Computer Products Supply Co
Gaithersburg, MD
Data General Corp
Westboro, MA
Datapoint Corp
San Antonio, TX
Digital Equipment Corporation
Marlboro, MA
General Electric Co
Data Comm Prod Dept
Waynesboro, VA
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co of Wisconsin
Sun Prairie, WI
Harris Corp
Composition Systems Div
Melbourne, FL
Honeywell Information Systems
Waltham, MA
Inmac
Santa Clara, CA
Keyline Inc
Santa Clara, CA
Kybe Corp
Waltham, MA
Lantor Inc
Playa Del Rey, CA
Maxell Corporation of America
Moonachie, NJ

Memorex Corp
Cupertino, CA
MFE Corp
Salem, NH
Micro Communications Corp
Waltham, MA
NCR Corp
Dayton, OH
Prime Computer Inc
Wellesley Hills, MA
Qantel Corporation
Hayward, CA
Siemens Corp
Iselin, NJ
Sperry Univac
Blue Bell, PA
Sperry Univac, MCO
Irvine, CA
Tandem Computers
Cupertino, CA
Tektronix Inc
Beaverton, OR
Telefile Computer Prod Inc
Phoenix, AZ
Telex Marketing Company
Culver City, CA
Terminal Data Corp
Rockville, MD
Wavetek Data Communications
San Diego, CA
Wright Line Inc
Worcester, MA

TAPE DRIVES, MAGNETIC

DATA GENERAL CORP
Westboro, MA **ADV PGS 37,38**
DATAPOINT CORP
San Antonio, TX **ADV PG 107**
HEWLETT-PACKARD CO
Palo Alto, CA **ADV PG 79**
PRIME COMPUTER INC
Wellesley Hills, MA **ADV PG 103**
SPECTRON
Moorestown, NJ **ADV PG 75**
TEKTRONIX INC
Beaverton, OR **ADV PGS 90,91**
American Used Computer Co
Boston, MA
AM Jacquard Systems
Santa Monica, CA
Ampex Corp
Redwood City, CA
Ampex Corp
Memory Products Div
El Segundo, CA
Applied Systems Corp
St Claire Shores, MI
Billings Computer Corporation
Provo, UT
Boston Financial & Equity Corp
Boston, MA
The Braegen Corp
Cupertino, CA
Burroughs Corp
Detroit, MI
Comark Corp
Waltham, MA
Computer Automation
Naked Mini Div
Irvine, CA
Computer Products Supply Co
Gaithersburg, MD
Comtek Inc
San Antonio, TX
Comten Inc
St Paul, MN
Data Communications Corp
Memphis, TN
Data Electronics Inc
San Diego, CA

Data General Corp
Westboro, MA
DatagraphiX Inc
San Diego, CA
Datapoint Corp
San Antonio, TX
Datum Inc
Anaheim, CA
Digi-Data Corp
Jessup, MD
Digital Equipment Corporation
Marlboro, MA
Digital Systems Corp
Walkersville, MD
Electronic Processors Inc
Englewood, CO
General Automation
Anaheim, CA
General Electric Co
Data Comm Prod Dept
Waynesboro, VA
General Telephone Co. of the Southwest
San Angelo, TX
Hewlett-Packard Co
Palo Alto, CA
HICO-Horizons International Co
Menlo Park, CA
Hitachi America Ltd
Computer Sales & Service Div
San Francisco, CA
Honeywell Information Systems
Waltham, MA
Incoterm Corp
A Subsidiary of Honeywell Inc
Wellesley Hills, MA
Megadata Corp
Bohemia, NY
Memorex Corp
Cupertino, CA
Micro Communications Corp
Waltham, MA
Microcomputer Systems Corp
Sunnyvale, CA
Mitron Systems Corp
Columbia, MD
Modular Computer Systems
Fort Lauderdale, FL
MTI Sales Corp
Great Neck, NY
NCR Corp
Dayton, OH
Northern Telecom Systems Corp
Minnetonka, MN
Olivetti Corp of America
New York, NY
Pertec Computer Corp
Peripherals Div
Chatsworth, CA
Perkin-Elmer
Oceanport, NJ
Perkin Elmer
Memory Products Div
Garden Grove, CA
Pertec Computer Corp
CSD Div
Los Angeles, CA
Plessey Peripheral Systems
Irvine, CA
Prime Computer Inc
Wellesley Hills, MA
Quad Systems Inc
Rockville, MD
Rianda Electronics Ltd
Anaheim, CA
Spectron
Moorestown, NJ
Sperry Univac
Blue Bell, PA
Sperry Univac, MCO
Irvine, CA
Storage Technology Corp
Louisville, CO

Tandberg Data Inc
San Diego, CA
Tandem Computers
Cupertino, CA
Tektronix Inc
Beaverton, OR
Telefile Computer Prod Inc
Phoenix, AZ
Texas Instruments
Dig Sys Div
Houston, TX
Three Phoenix Co
Phoenix, AZ
Unicom Computer Corporation
Sausalito, CA
Wavetek Data Communications
San Diego, CA
Western Peripherals Inc
Anaheim, CA
Xebec Systems
Santa Clara, CA
Xycon Computer Systems
Arlington, WA

TAPE, PAPER

DATA GENERAL CORP
Westboro, MA **ADV PGS 37,38**
SIEMENS CORP
Iselin, NJ **ADV PGS 130,131**
TEKTRONIX INC
Beaverton, OR **ADV PGS 90,91**
Addmaster Corp
San Gabriel, CA
American Used Computer Co
Boston, MA
Boston Financial & Equity Corp
Boston, MA
ComData Corp
Skokie, IL
Compugraphic Corp
Wilmington, MA
Data General Corp
Westboro, MA
Data Specialties Inc
Northbrook, IL
Decitek Div
Jamesbury Corp
Westboro, MA
Digital Equipment Corporation
Marlboro, MA
Ex-Cell-O Remex Div
Irvine, CA
Facit Inc
Greenwich, CT
General Telephone Co of Kentucky
Lexington, KY
Inmac
Santa Clara, CA
NCR Corp
Dayton, OH
Phone 1 Inc
Rockford, IL

Robins Industries Corp
Commack, NY
Siemens Corp
Iselin, NJ
Sperry Univac, MCO
Irvine, CA
Sweda International
Pine Brook, NJ
Tektronix Inc
Beaverton, OR
Telex Marketing Company
Culver City, CA
Tel-Tex Inc
Houston, TX
Terminal Data Corp
Rockville, MD
Trendata Corp
Sunnyvale, CA
Vardon & Associates
Irving, TX
The Western Union Telegraph Co
Upper Saddle River, NJ

TAPE PUNCH/READER, PAPER

DATA GENERAL CORP
Westboro, MA **ADV PGS 37,38**
SIEMENS CORP
Iselin, NJ **ADV PGS 130,131**
Addmaster Corp
San Gabriel, CA
American Used Computer Co
Boston, MA
Bell & Howell Display Devices
Telemation Div
Salt Lake City, UT
Boston Financial & Equity Corp
Boston, MA
Carterfone Communications Corp
Dallas, TX
ComData Corp
Skokie, IL
Complete Computer Systems
Horsham, PA
Compression Labs Inc
Cupertino, CA
Computer Automation
Naked Mini Div
Irvine, CA
Custom Terminals Corp
Hauppauge, NY
Data General Corp
Westboro, MA
Data Specialties Inc
Northbrook, IL
Decitek Div
Jamesbury Corp
Westboro, MA
Digital Equipment Corporation
Marlboro, MA
Dobson Woodbury Research Inc
Salt Lake City, UT
EECO Incorporated
Santa Ana, CA

Ex-Cell-O Remex Div
Irvine, CA
Extel Corp.
Northbrook, IL
Facit Inc
Greenwich, CT
General Automation
Anaheim, CA
General Electric Co
Data Comm Prod Dept
Waynesboro, VA
General Telephone Co of Kentucky
Lexington, KY
Harris Corp
Composition Systems Div
Melbourne, FL
Incoterm Corp
A Subsidiary of Honeywell Inc
Wellesley Hills, MA
Inmac
Santa Clara, CA
International Computer Products
Dallas, TX
Kleinschmidt
Div SCM
Deerfield, IL
Lantor Inc
Playa Del Rey, CA
Megadata Corp
Bohemia, NY
Modular Computer Systems
Fort Lauderdale, FL
NCR Corp
Dayton, OH
Olivetti Corp of America
New York, NY
Pacific Cyber/Metrix Inc
San Ramon, CA
Perkin-Elmer
Oceanport, NJ
Rental Electronics Inc
Palo Alto, CA
Rianda Electronics Ltd
Anaheim, CA
Siemens Corp
Iselin, NJ
Sperry Univac
Blue Bell, PA
Sweda International
Pine Brook, NJ
Teletype Corp
Skokie, IL
Telex Marketing Company
Culver City, CA
Tel-Tex Inc
Houston, TX
Trendata Corp
Sunnyvale, CA
Vardon & Associates
Irving, TX

For local phone numbers of companies, turn to **Vendor Directory, page 301.**

Audio response units
Badge readers
Bar code readers
Batch terminals
Data entry terminals, portable
Digital plotters
Digitized voice processors
Facsimile terminals
Graphic display terminals
Intelligent (programmable) terminals
Interactive systems
Remote line printers
Remote job entry terminals
Teleprinters
- Impact
- Non impact
Telescriber
Teletypewriters
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)
Word recognition units
Word processing, communicating

Terminals

During 1979, data communications terminals have been introduced which represent a new wave of technological development. Tiny transmitters, voice-entry machines, keyboards without moving parts, and state-of-the-art graphics displays have all been incorporated in terminals this year, and the first three at least are available in large quantities.

Meanwhile, AT&T has revealed which data terminals will be compatible with its planned Advanced Communications Service (ACS) network. But users who have been looking forward to the day when the X.25 standard would be adopted by the terminal industry will have to wait still longer.

Two-way radio computer terminals that combine the ability to access and update databases with the portability of hand-held mobile radios are being offered by at least three firms. These mobile radio computer terminals are so new to the data communications scene that nobody has even thought up a descriptive buzzword to describe them yet.

The systems developed so far have calculator-style keyboards linked to rf transceivers using FM frequencies in the 420- to 512-MHz band. The information, transmitted via FM radio, is sent to a communications controller and converter into a format capable of being received by the host computer. At present, binary synchronous (IBM 3270) and asynchronous serial protocols are in operation, with others being developed. Systems from Motorola and TauMark, a small firm from Middletown, Wis., are IBM 3270 compatible. Motorola has added forward error detection and correction for the rf link, while TauMark's error handling uses character parity, LRC, and character count, with retransmission on any error detection. Another company, Electromagnetic Sciences Inc. of Atlanta, Ga., has entered the field with a terminal compatible with asynchronous communications.

These portable terminals are intended for users who must be on the move, making the use of stationary terminals either inconvenient or impractical. The need

for real-time computer access is also a necessity. If the application can be handled in batch mode, there are less costly hand-held portable terminals, from firms like MSI Data, Telxon, and Azurdata, that can be used.

More than talk

On another technological front, voice data entry has gained steam this year. It is still too soon to predict the ultimate impact that voice entry will have on data communications terminals, but, based upon already proven technology in available products, voice recognition is likely to be in the forefront of data entry applications as early as the mid-1980s, and almost certainly before 1990.

A voice recognition device, as far as the remote computer is concerned, functions in the same way as a keyboard terminal using the same protocol. Figure 1 details how voice data entry is achieved.

Quality-control is an example of where voice recognition is now effective. These include such situations in which testers must interact with a product, enter parameters either directly into a computer via a keyboard or onto coding sheets for later entry, and then use the computer to determine whether the product passes inspection. Continental Can, Reynolds Metals, and Owens-Illinois Inc. all use voice recognition for these applications, as do Colt Industries and the Gear Meat Co. in New Zealand. In each case the technology allows the operator to interact with the computer in real time, saving the nonproductive pauses related to entering data on a keyboard or coding sheet.

A typical system can cost between \$70,000 and \$150,000, which is a fairly expensive price when compared with hand-held batch computer terminals that are an order of magnitude less costly. Thus, it would seem that the payoff for mobile radio computer terminals must be found in the increased productivity of employees and the value of real-time access to data, which takes a longer time to evaluate against direct cost-replacement systems.

During 1979, a small West Coast company has intro-

duced a ruggedized, self-enclosed, solid-state membrane-type keyboard that is likely to open up new vistas for communications terminals. The keyboard is completely free of moving parts and can operate in such rough or dirty environments as grain elevators, machine shops, military tanks, and offshore oil rigs.

Activation areas

In addition, its low price could make it an inexpensive control panel for executive suites or home hobbyists. Developed by Touch-Activated Switch Arrays Inc. (TASA), the terminal keyboard is now available for quantity shipments.

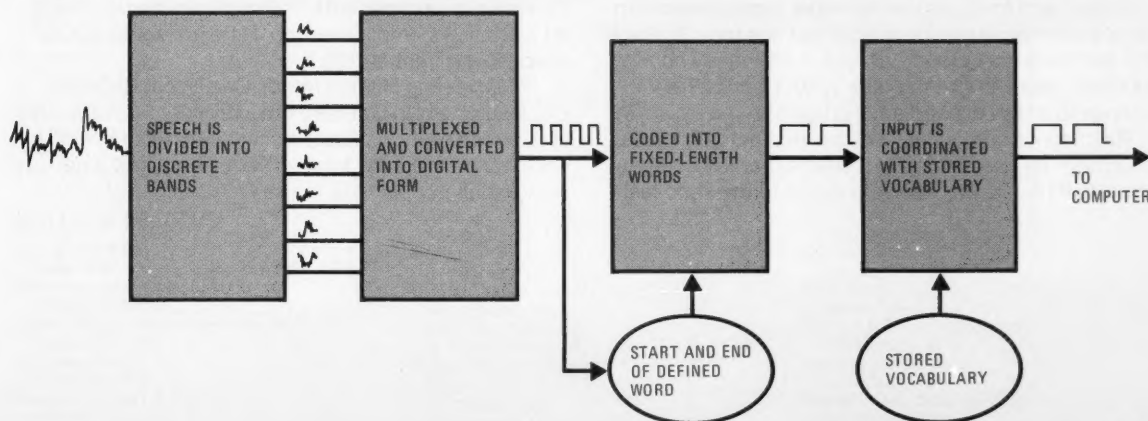
The keys on this non-conventional keyboard are activation areas—much like the glass panels on modern elevators—that can be colored, organized, and labeled in any configuration that a customer wants. But there are other unusual features: The keyboard is one-third of an inch thick, uses one-tenth of the power of an ordinary keyboard, can be washed off with a high-pressure hose, or even thrown into a dishwasher. When it is configured as an ordinary typewriter, it weighs 19 ounces compared with 2 to 6 pounds for mechanical keyboards. The keyboard uses built-in electronics which are sealed within the polycarbonate surface. That allows an encoded 8-bit parallel output that is verified, processed, and ready to connect directly with the data bus of most computer systems (either TTL or CMOS). The units cost just \$75.

In the area of terminal display, a Canadian firm has developed and demonstrated a unique scheme called Telidon graphics.

The attraction of Telidon's graphics is its alpha-geometric technique, in which elementary geometric forms—such as lines, circles, and arcs—are generated to form the total picture. This contrasts with traditional graphics techniques in which blocks of graphic elements are assembled, left to right, on a screen.

With Telidon, seven-color displays are possible. Although Telidon displays are not yet commercially available in this country, a number of Canadian firms are

1 Voice input



expected to begin producing them in 1980.

While the preceding technological advances promise even more exotic terminals in the future, today's user of public networks is still fairly confined as to the type of terminal he may use. Even AT&T's ambitious ACS network will be accessible by a limited number of terminals.

ACS details revealed

The following five classes of terminal protocols will be supported by ACS:

- Asynchronous contention-character mode
- Asynchronous contention-block mode
- Asynchronous polled
- Synchronous polled
- Synchronous contention

Each class includes a variety of well-known and widely used terminals. Support for each class will be based on parameters so that minor differences among similar terminals can be accommodated. Some parameters related to the physical device will be modified only by service order. Others may be dynamically altered on an individual basis.

For each of the five protocol classes detailed above, specific physical-line-control, logical-link control, and operational-format-control aspects are supported. Support of the physical line includes electrical characteristics and data set signaling.

Support of the logical link includes handling the specific link protocol with its various options for polling, selection, and error handling.

The network emulates the following widely supported terminals:

- Model 33/35 teletypewriter
- IBM 3271-1, -2 cluster controllers
- IBM 2780 terminal

Slow X.25 growth

Three years ago, when X.25 was adopted as a standard protocol for packet-switched networks, it appeared that users would be able to operate more efficiently. Since the protocol reduces the communications requirements of a node's host computer, the use of terminals as full-fledged network nodes was possible.

Today, and for at least a few more years, this advantage will remain largely a conceptual one for U.S. users. For terminals, the support of X.25 is still nearly nonexistent. Interestingly, this lack of support is in response to a lack of need among users.

Raytheon is one of the few firms that actually make a terminal for use with X.25. It seems that the company used its PTS-100, and IBM emulation terminal, to test

the waters for an X.25-based terminal market. And since that introduction in 1977, the firm has been very quiet about expanding X.25 support to more of its line.

Raytheon is by no means alone. Every terminal manufacturer is still waiting to make a final decision on X.25—waiting, it seems, for IBM to make its plans known first.

IBM, it is clear, holds the key to an X.25-terminal base and does support the protocol in Europe and Canada. This non-U.S. support, however, in no way guarantees that the computer firm will provide similar support in the U.S. Of the vast IBM product menu, only the Series/1 minicomputer is capable of operating in an X.25-configured packet network. IBM, though, is not supporting the Series/1 with its own X.25 software. For that, a user must shop elsewhere.

Even AT&T is paying scant attention to X.25. Although AT&T has claimed that its ACS network will be built to X.25 specifications, AT&T's terminal manufacturing arm, Teletype Corp. in Skokie, Ill., has not yet made an X.25 terminal available.

Teletype's newest product, the 4500 series intelligent terminal, has provisions for future use of some bit-oriented protocols. Nevertheless, the company stops short of stating that X.25 will be among the protocols with which the new machine will operate. ■

For more on terminals see the following Data Communications articles:

1. "Matching Teleprinters to X.25 Packet-Switching Networks," Richard B. Hovey, Oct. 1977, p. 63. The procedures for incorporating teleprinter terminals into packet-switched networks are detailed.
2. "Distributed RJE Terminals Combine with Central DP," James M. Brown, A. S. Hansen, Dec. 1977, p. 67. A case history reveals how an accounting firm integrated remote job entry terminals with a central data processing network.
3. "What the Future Holds for Smart Terminals," George R. Davis, Nov. 1977, p. 39. What makes a terminal intelligent and what role these machines play in data communications.
4. "As Terminal Types Multiply, so Do Problems of Selection," Donald H. Haback, July 1978, p. 53. Choosing the proper data communications terminal is an extremely complicated job. Here are some tips for ensuring the right choice.
5. "Considering Human Needs Can Boost Network Efficiency," Philip G. Elam, Oct. 1978, p. 51. Terminals engineered with operators in mind can make the difference between a busy interactive network and a network which people hate to use.

AUDIO RESPONSE UNITS

Centigram Corp
Sunnyvale, CA
Cincinnati Bell
Cincinnati, OH
Garyco Data Systems Inc
Seattle, WA
Interface Systems Inc
Ann Arbor, MI
Master Specialties Co
Costa Mesa, CA
Periphonics Corp
Bohemia, NY
Phone 1 Inc
Rockford, IL
Qantel Corporation
Hayward, CA
Transcom Inc
Sub of HI-G Inc
Windsor Locks, CT
Votrax Div
Federal Screw Works
Troy, MI
Wavetek Data Communications
San Diego, CA

BADGE READERS**HEWLETT-PACKARD CO**

Palo Alto, CA **ADV PG 79**

TEC INC

Tucson, AZ **ADV PG 132**

American Used Computer Co
Boston, MA
Boston Financial & Equity Corp
Boston, MA
Coastal Data Products
Miami, FL
Computer Optics Inc
Bethel, CT
Comtek Inc
San Antonio, TX
Custom Terminals Corp
Hauppauge, NY
Danyl Corp
Pennsauken, NJ
Digital Datacom Inc
Irvine, CA
Digital Equipment Corporation
Marlboro, MA
Dobson Woodbury Research Inc
Salt Lake City, UT
Epic Data Corp
Richmond, BC
Hewlett-Packard Co
Palo Alto, CA
Identification Systems Inc
Acton, MA
NCR Corp
Dayton, OH
Olivetti Corp of America
New York, NY
Phone 1 Inc
Rockford, IL
Rusco Electronic Systems
Glendale, CA
Schlage Electronics
Sunnyvale, CA
TEC Inc
Tucson, AZ

BAR CODE READERS**TALLY CORP**

Kent, WA **ADV PG 137**

American Used Computer Co
Boston, MA
Ames Medical Record Systems Div
Somerville, MA
Azurdata Inc
Richland, WA
Boston Financial & Equity Corp
Boston, MA
Cincinnati Bell
Cincinnati, OH

Computer Devices Inc
Burlington, MA
Comtec Information Systems Inc
Cumberland, RI
Cummins-Allison Corp
Data Sys Div
Elk Grove Village, IL
Custom Terminals Corp
Hauppauge, NY
Dest Data Corp
Sunnyvale, CA
Digital Equipment Corporation
Marlboro, MA
Digital Systems Corp
Walkersville, MD
Dobson Woodbury Research Inc
Salt Lake City, UT
Epic Data Corp
Richmond, BC
Informer Inc
Los Angeles, CA
Interface Mechanisms Inc
Lynnwood, WA
International Computer Products
Dallas, TX
MSI Data Corp
Costa Mesa, CA
NCR Corp
Dayton, OH
Recognition Equipment Inc
Dallas, TX
Sperry Univac
Blue Bell, PA
Tally Corp
Kent, WA
Terminal Specialties Inc
Salt Lake City, UT
W A Brown Instruments
Orlando, FL

For local phone numbers of companies, turn to **Vendor Directory, page 301.**

BATCH TERMINALS**DATA GENERAL CORP**

Westboro, MA **ADV PGS 37,38**

DATAPOINT CORP

San Antonio, TX **ADV PG 107**

DECISION DATA COMPUTER CORP

Horsham, PA **ADV PG 143**

DOCUMENTATION INC

Melbourne, FL **ADV PG 142**

HEWLETT-PACKARD CO

Palo Alto, CA **ADV PG 79**

MOHAWK DATA SCIENCES CORP

Parsippany, NJ **ADV PG 104**

SYKES DATATRONICS

Rochester, NY **ADV PG 139**

SYSTEMATICS GENERAL CORP

Falls Church, VA **ADV PG 135**

TEKTRONIX INC

Beaverton, OR **ADV PGS 90,91**

WANG LABORATORIES INC

Lowell, MA **ADV PGS 105,106**

American Terminal Leasing Co
Boston, MA
American Used Computer Co
Boston, MA
AM Jacquard Systems
Santa Monica, CA
Ann Arbor Terminals
Ann Arbor, MI
Applied Digital Data Systems Inc
Hauppauge, NY
Applied Systems Corp
St Claire Shores, MI
Boston Financial & Equity Corp
Boston, MA
The Braegen Corp
Cupertino, CA
Burroughs Corp
Detroit, MI

Cado Systems Corp
Torrance, CA
Cambridge Telecommunications
Burlington, MA
Cincinnati Bell
Cincinnati, OH
Computer Devices Inc
Burlington, MA
Computer Optics Inc
Bethel, CT
Comtec Information Systems Inc
Cumberland, RI
Comten Inc
St Paul, MN
Cummins-Allison Corp
Data Sys Div
Elk Grove Village, IL
Data Dimensions Inc
Cos Cob, CT
Data General Corp
Westboro, MA
Datapoint Corp
San Antonio, TX
Data Printer Corp
Malden, MA
Data Rentals/Sales Inc
Culver City, CA
Decision Data Computer Corp
Horsham, PA
Delta Data Systems
Cornwell Heights, PA
Digital Datacom Inc
Irvine, CA
Dobson Woodbury Research Inc
Salt Lake City, UT
Documation Inc
Melbourne, FL
Durango Systems
San Jose, CA
Electronic Interface Assoc Inc
New York, NY
Epic Data Corp
Richmond, BC
Four-Phase Systems Inc
Cupertino, CA
General Automation
Anaheim, CA
General Electric Co
Data Comm Prod Dept
Waynesboro, VA
General Telephone Co of Kentucky
Lexington, KY
Harris Corp
Data Communications Div
Dallas, TX
Hawaiian Telephone Co
Honolulu, HI
Hetra Computer & Communications
Industries Inc
Melbourne, FL
Hewlett-Packard Co
Palo Alto, CA
Honeywell Information Systems
Waltham, MA
IESI Inc
Seattle, WA
Incoterm Corp
A Subsidiary of Honeywell Inc
Wellesley Hills, MA
Inforex Inc
Burlington, MA
Informer Inc
Los Angeles, CA
MFE Corp
Salem, NH
Micro Applications Systems Inc
Minneapolis, MN
Mitron Systems Corp
Columbia, MD
Mohawk Data Sciences Corp
Parsippany, NJ
MSI Data Corp
Costa Mesa, CA

NCR Corp
Dayton, OH
Northern Telecom Systems Corp
Minnetonka, MN
Olivetti Corp of America
New York, NY
Paradyne Corp
Largo, FL
PCS Inc
Saline, MI
Qantel Corporation
Hayward, CA
Radian Corp-Unitech Products
Austin, TX
Scan-Data Corp
Norristown, PA
Southwestern Bell Telephone Co
St Louis, MO
Sperry Univac
Blue Bell, PA
Sperry Univac, MCO
Irvine, CA
Sykes Datatronics
Rochester, NY
Systematics General Corp
Falls Church, VA
Tab Products Co
Palo Alto, CA
Techtran Industries
Rochester, NY
Tektronix Inc
Beaverton, OR
Teletype Corp
Skokie, IL
Terminal Specialties Inc
Salt Lake City, UT
Wang Laboratories Inc
Lowell, MA

DATA ENTRY TERMINALS, PORTABLE

DATA ACCESS SYSTEMS INC
Mountain Lakes, NJ **ADV PG 141**
GENERAL ELECTRIC —
INSTRUMENTATION &
COMMUNICATIONS EQUIP SERVICE
Schenectady, NY **ADV PGS 163,165**
HEWLETT-PACKARD CO
Palo Alto, CA **ADV PG 79**
TALLY CORP
Kent, WA **ADV PG 137**
Applied Systems Corp
St Claire Shores, MI
Azurdata Inc
Richland, WA
Burroughs Corp
Detroit, MI
Cincinnati Bell
Cincinnati, OH
Computer Devices Inc
Burlington, MA
Computer Transceiver Systems Inc
Paramus, NJ
Comtec Information Systems Inc
Cumberland, RI
Danyl Corp
Pennsauken, NJ
Data Access Systems Inc
Mountain Lakes, NJ
Datamedia Corp
Pennsauken, NJ
Data Rentals/Sales Inc
Culver City, CA
Digicom Data Products Inc.
San Jose, CA
Digi-Log Systems Inc
Network Control Div
Horsham, PA
Electronic Interface Assoc Inc
New York, NY
General Electric — Instrumentation &
Communications Equip Service
Schenectady, NY

General Telephone Co. of the Southwest
San Angelo, TX
Hawaiian Telephone Co
Honolulu, HI
Hetra Computer & Communications
Industries Inc
Melbourne, FL
Hewlett-Packard Co
Palo Alto, CA
Human Designed Systems Inc
Philadelphia, PA
IESI Inc
Seattle, WA
Interface Systems Inc
Ann Arbor, MI
Leasametric
Foster City, CA
Micon Industries
Oakland, CA
Micro Applications Systems Inc
Minneapolis, MN
Modular Computer Systems
Fort Lauderdale, FL
MSI Data Corp
Costa Mesa, CA
MTI Sales Corp
Great Neck, NY
Northern Telecom Systems Corp
Minnetonka, MN
Recognition Equipment Inc
Dallas, TX
Rental Electronics Inc
Palo Alto, CA
SCI Systems Inc
Huntsville, AL
South Central Bell Telephone Co
Birmingham, AL
Tally Corp
Kent, WA
Techtran Industries
Rochester, NY
Telcon Industries
Fort Lauderdale, FL
Tel-Tex Inc
Houston, TX
Termiflex Corp
Nashua, NH
Terminal Specialties Inc
Salt Lake City, UT
Terminal Systems Inc
N Hollywood, CA
Texas Instruments
Dig Sys Div
Houston, TX
Three Phoenix Co
Phoenix, AZ
Trans Net Corp
Union, NJ
U S Instrumental Rentals
San Mateo, CA

DIGITAL PLOTTERS

GENERAL ELECTRIC —
INSTRUMENTATION &
COMMUNICATIONS EQUIP SERVICE
Schenectady, NY **ADV PGS 163,165**
HEWLETT-PACKARD CO
Palo Alto, CA **ADV PG 79**
TEKTRONIX INC
Beaverton, OR **ADV PGS 90,91**
Broomall Industries Inc
Broomall, PA
Datametrics Corp
Van Nuys, CA
Digital Datacom Inc
Irvine, CA
First Computer Corp
Westmont, IL
Florida Data Corp
Melbourne, FL
General Electric — Instrumentation &
Communications Equip Service
Schenectady, NY

Hewlett-Packard Co
Palo Alto, CA
Leasametric
Foster City, CA
Nicolet Zeta Corp
Concord, CA
Rental Electronics Inc
Palo Alto, CA
Selenar Corp
Santa Clara, CA
Tektronix Inc
Beaverton, OR
Versatec Inc
Santa Clara, CA

DIGITIZED VOICE PROCESSORS

American Modem Corp
Bohemia, NY
Electronic Interface Assoc Inc
New York, NY
E-Systems Inc
Garland Div
Garland, TX
International Communications Sciences
Chatsworth, CA
Interstate Electronics Corp
Anaheim, CA
Master Specialties Co
Costa Mesa, CA
Phone 1 Inc
Rockford, IL
Quad Systems Inc
Rockville, MD
Telecommunications Techniques Corp
Rockville, MD
Time & Space Processing Inc
Cupertino, CA
Versitron Inc
Washington, DC

FACSIMILE TERMINALS

SIEMENS CORP
Iselin, NJ **ADV PGS 130,131**
Alden Electronic & Impulse
Recording Equipment Co Inc
Westboro, MA
Burroughs Corp
Detroit, MI
Electronic Interface Assoc Inc
New York, NY
EMR Data Systems
Sarasota, FL
E-Systems Inc
Garland Div
Garland, TX
Graphic Sciences Inc
Danbury, CT
Muirhead Inc
Mountainside, NJ
Panafax Corp
Woodbury, NY
Rapicom Inc
Santa Clara, CA
Siemens Corp
Iselin, NJ
SP Communications
Burlingame, CA
Telautograph Corporation
Los Angeles, CA

GRAPHIC DISPLAY TERMINALS

DATA ACCESS SYSTEMS INC
Mountain Lakes, NJ **ADV PG 141**
HEWLETT-PACKARD CO
Palo Alto, CA **ADV PG 79**
SYSTEMATICS GENERAL CORP
Falls Church, VA **ADV PG 135**
TEKTRONIX INC
Beaverton, OR **ADV PGS 90,91**
WANG LABORATORIES INC
Lowell, MA **ADV PGS 105,106**
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Boston, MA

Advanced Electronics Design Inc
Sunnyvale, CA
Alden Electronic & Impulse
Recording Equipment Co Inc
Westboro, MA
American Used Computer Co
Boston, MA
Ann Arbor Terminals
Ann Arbor, MI
Applied Systems Corp
St Claire Shores, MI
Aydin Controls
Ft Washington, PA
Bell & Howell Display Devices
Telemation Div
Salt Lake City, UT
Billings Computer Corporation
Provo, UT
Boston Financial & Equity Corp
Boston, MA
California Computer Products Inc
Anaheim, CA
CompuTek Inc
Burlington, MA
Comtal Corp
Pasadena, CA
Data Access Systems Inc
Mountain Lakes, NJ
Data Dimensions Inc
Cos Cob, CT
Data Equipment Inc
Sunnyvale, CA
Digital Equipment Corporation
Marlboro, MA
Dobson Woodbury Research Inc
Salt Lake City, UT
Electro Rent
Burbank, CA
E-Systems Inc
Garland Div
Garland, TX
First Computer Corp
Westmont, IL
Genisco Computers
Irvine, CA
Hewlett-Packard Co
Palo Alto, CA
Hughes Aircraft Co
Industrial Products Div
Carlsbad, CA
Human Designed Systems Inc
Philadelphia, PA
Imlac Corp
Needham, MA
Intelligent Systems Corp
Norcross, GA
Interstate Electronics Corp
Anaheim, CA
Leasametric
Foster City, CA
Lexicon Inc
Waltham, MA
Lexidata Corp
Burlington, MA
Lundy Electronics & Systems Inc
Glen Head, NY
Magnavox Government & Ind Electronics Co
Magnavox Display Systems
Ft Wayne, IN
Megadata Corp
Bohemia, NY
Megatek
San Diego, CA
Nicolet Zeta Corp
Concord, CA
Perkin-Elmer
Oceanport, NJ

Polymorphic Systems
Santa Barbara, CA
Ramtek Corp
Santa Clara, CA
RCA Global Communications Inc
New York, NY
Rental Electronics Inc
Palo Alto, CA
SAI Technology Co
San Diego, CA
Systematics General Corp
Falls Church, VA
Tektronix Inc
Beaverton, OR
Terminal Specialties Inc
Salt Lake City, UT
Trans Net Corp
Union, NJ
Unicom Computer Corporation
Sausalito, CA
W A Brown Instruments
Orlando, FL
Wang Laboratories Inc
Lowell, MA
Xycon Computer Systems
Arlington, VA

INTELLIGENT (PROGRAMMABLE) TERMINALS

ALANTHUS DATA COMMUNICATIONS CORP

Rockville, MD ADV PG 134

CODEX CORPORATION

Mansfield, MA ADV PGS 81-88

DATA ACCESS SYSTEMS INC

Mountain Lakes, NJ ADV PG 141

DATA GENERAL CORP

Westboro, MA ADV PGS 37,38

DATAPoint CORP

San Antonio, TX ADV PG 107

HEWLETT-PACKARD CO

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SPECTRON

Moorestown, NJ ADV PG 75

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Kent, WA ADV PG 137

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Agile Corp

Sunnyvale, CA

Alanthus Data Communications Corp

Rockville, MD

Alpex Computer Corp

Danbury, CT

American Satellite Corp

Germantown, MD

American Terminal Leasing Co

Boston, MA

American Used Computer Co

Boston, MA

AM Jacquard Systems

Santa Monica, CA

Applied Digital Data Systems Inc

Hauppauge, NY

Applied Systems Corp

St Claire Shores, MI

Aydin Controls

Ft Washington, PA

Beehive International

Salt Lake City, UT

Boston Financial & Equity Corp

Boston, MA

The Braegen Corp

Cupertino, CA

Bunker Ramo Corp/Info Sys Div
Trumbull, CT
Burroughs Corp
Detroit, MI
Cado Systems Corp
Torrance, CA
California Computer Products Inc
Anaheim, CA
Cambridge Telecommunications
Burlington, MA
Carterfone Communications Corp
Dallas, TX
CD Johnson/Assoc Ltd
Ottawa, ON
CMC Marketing Corp
Houston, TX
Coastal Data Products
Miami, FL
Codex Corporation
Mansfield, MA
Comark Corp
Waltham, MA
Commtext Inc
Crofton, MD
Compuscan Inc
Teterboro, NJ
CompuTek Inc
Burlington, MA
Computer Automation
Naked Mini Div
Irvine, CA
Computer Devices Inc
Burlington, MA
Computer-Link Corp
Burlington, MA
Comtal Corp
Pasadena, CA
Comtec Information Systems Inc
Cumberland, RI
Comtek Inc
San Antonio, TX
Continental Resources Inc
Bedford, MA
Crown Communications Inc
Dallas, TX
Cummins-Allison Corp
Data Sys Div
Elk Grove Village, IL
Custom Terminals Corp
Hauppauge, NY
Data Access Systems Inc
Mountain Lakes, NJ
Data Dimensions Inc
Cos Cob, CT
Data General Corp
Westboro, MA
Datamedia Corp
Pennsauken, NJ
Datapoint Corp
San Antonio, TX
Data Rentals/Sales Inc
Culver City, CA
Dataroyal
Nashua, NH
Data Terminals & Communications
Campbell, CA
Datatrol Inc
Hudson, MA
Decision Strategy Corporation
New York, NY
Delta Data Systems
Cornwell Heights, PA
Digi-Log Systems Inc
Network Control Div
Horsham, PA
Digital Equipment Corporation
Marlboro, MA
Digital Systems Corp
Walkersville, MD
Dobson Woodbury Research Inc
Salt Lake City, UT
Durango Systems
San Jose, CA

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201.**

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EECO Incorporated
Santa Ana, CA
Electro Rent
Burbank, CA
Epic Data Corp
Richmond, BC
E-Systems Inc
Garland Div
Garland, TX
Extel Corp.
Northbrook, IL
Four-Phase Systems Inc
Cupertino, CA
Garyco Data Systems Inc
Seattle, WA
General Automation
Anaheim, CA
General Telephone Co of Kentucky
Lexington, KY
GNAT Computers, Inc.
San Diego, CA
Hands-On Terminals Inc
Portland, OR
Harris Corp
Data Communications Div
Dallas, TX
Heath Co
Benton Harbor, MI
Hetra Computer & Communications
Industries Inc
Melbourne, FL
Hewlett-Packard Co
Palo Alto, CA
Hitachi America Ltd
Computer Sales & Service Div
San Francisco, CA
Honeywell Information Systems
Waltham, MA
Human Designed Systems Inc
Philadelphia, PA
IESI Inc
Seattle, WA
Imlac Corp
Needham, MA
Incoterm Corp
A Subsidiary of Honeywell Inc
Wellesley Hills, MA
Informer Inc
Los Angeles, CA
Intelligent Systems Corp
Norcross, GA
Intelligent Terminals Inc
Los Altos, CA
International Computer Products
Dallas, TX
Interstate Electronics Corp
Anaheim, CA
Intertec Data Systems Corporation
Columbia, SC
Lantor Inc
Playa Del Rey, CA
Leasametric
Foster City, CA
Lexicon Inc
Waltham, MA
Lundy Electronics & Systems Inc
Glen Head, NY
Magnavox Government & Ind Electronics Co
Magnavox Display Systems
Ft Wayne, IN
Megadata Corp
Bohemia, NY
Megatek
San Diego, CA
Memorex Corp
Cupertino, CA
Micro Applications Systems Inc
Minneapolis, MN
Mohawk Data Sciences Corp
Parsippany, NJ

Motorola Semiconductor Prod
Phoenix, AZ
MTI Sales Corp
Great Neck, NY
NCR Corp
Dayton, OH
NEC Information Systems Inc
Lexington, MA
Northern Telecom Systems Corp
Minnetonka, MN
Olivetti Corp of America
New York, NY
PCS Inc
Saline, MI
Periphonics Corp
Bohemia, NY
Perkin-Elmer
Oceanport, NJ
Perkin-Elmer Terminals Div
Flanders, NJ
Pertec Computer Corp
CSD Div
Los Angeles, CA
Plessey Fairfield
Div Plessey Inc
Fairfield, NJ
Plessey Peripheral Systems
Irvine, CA
Qantel Corporation
Hayward, CA
Qume Corp
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Racal-Milgo
Miami, FL
Radian Corp-Unitech Products
Austin, TX
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Santa Clara, CA
Raytheon Data Systems
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Data Services
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SAI Technology Co
San Diego, CA
Scan-Data Corp
Norristown, PA
SCI Systems Inc
Huntsville, AL
Sidercal Corp
Portland, OR
Solid State Technology Inc
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Soroc
Anaheim, CA
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Blue Bell, PA
Sperry Univac, MCO
Irvine, CA
Sykes Datatronics
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Systematics General Corp
Falls Church, VA
Tab Products Co
Palo Alto, CA
Tally Corp
Kent, WA
Tektronix Inc
Beaverton, OR
Teleray Div
Research Inc
Minneapolis, MN
Tel-Tex Inc
Houston, TX
Termiflex Corp
Nashua, NH

Terminal Data Corp
Rockville, MD
Terminal Rentals Inc
Orange, CA
Terminal Specialties Inc
Salt Lake City, UT
Texas Instruments
Dig Sys Div
Houston, TX
Trans Net Corp
Union, NJ
TRW Communications Group
Los Angeles, CA
Tymnet Inc
Cupertino, CA
Vardon & Associates
Irving, TX
Vector Graphic Inc
Westlake Village, CA
W A Brown Instruments
Orlando, FL
Wang Laboratories Inc
Lowell, MA
Xycon Computer Systems
Arlington, WA
Zentec
Santa Clara, CA

INTERACTIVE SYSTEMS

DATA GENERAL CORP
Westboro, MA ADV PGS 37,38
DATAPOINT CORP
San Antonio, TX ADV PG 107
HEWLETT-PACKARD CO
Palo Alto, CA ADV PG 79
MOHAWK DATA SCIENCES CORP
Parsippany, NJ ADV PG 104
PRIME COMPUTER INC
Wellesley Hills, MA ADV PG 103
TALLY CORP
Kent, WA ADV PG 137
TEKTRONIX INC
Beaverton, OR ADV PGS 90,91
WANG LABORATORIES INC
Lowell, MA ADV PGS 105,106
Adage Inc
Boston, MA
Applied Digital Data Systems Inc
Hauppauge, NY
Aydin Controls
Ft Washington, PA
Beehive International
Salt Lake City, UT
The Braegen Corp
Cupertino, CA
Broomall Industries Inc
Broomall, PA
Bunker Ramo Corp/Info Sys Div
Trumbull, CT
Bunker Ramo/Electronic Systems
Westlake Village, CA
Burroughs Corp
Detroit, MI
California Computer Products Inc
Anaheim, CA
Complete Computer Systems
Horsham, PA
Compuscan Inc
Teterboro, NJ
Computer Automation
Naked Mini Div
Irvine, CA
Computer Devices Inc
Burlington, MA
Computer Optics Inc
Bethel, CT
Comtal Corp
Pasadena, CA
Comtek Inc
San Antonio, TX
Continental Resources Inc
Bedford, MA
Cummins-Allison Corp

Data Sys Div
Elk Grove Village, IL
Data Communications Corp
Memphis, TN
Data Equipment Inc
Sunnyvale, CA
Data General Corp
Westboro, MA
DatagraphiX Inc
San Diego, CA
Datapoint Corp
San Antonio, TX
Dataroyal
Nashua, NH
Datatrol Inc
Hudson, MA
Delta Data Systems
Cornwell Heights, PA
Digital Equipment Corporation
Marlboro, MA
Digital Systems Corp
Walkersville, MD
DMC Div
Cetec Corp
Santa Clara, CA
Durango Systems
San Jose, CA
Electronic Interface Assoc Inc
New York, NY
Epic Data Corp
Richmond, BC
Evans & Sutherland Computer Corp
Salt Lake City, UT
Four-Phase Systems Inc
Cupertino, CA
Gamma Technology Inc
Palo Alto, CA
Garyco Data Systems Inc
Seattle, WA
General Automation
Anaheim, CA
General Electric Co
Data Comm Prod Dept
Waynesboro, VA
Harris Corp
Data Communications Div
Dallas, TX
Hawaiian Telephone Co
Honolulu, HI
Hewlett-Packard Co
Palo Alto, CA
Honeywell Information Systems
Waltham, MA
Hughes Aircraft Co
Industrial Products Div
Carlsbad, CA
IESI Inc
Seattle, WA
Imlac Corp
Needham, MA
ITT Courier Terminal Systems Inc
Tempe, AZ
Leasametric
Foster City, CA
Logical Machine Corporation
Sunnyvale, CA
Lundy Electronics & Systems Inc
Glen Head, NY
Magnavox Government & Ind Electronics Co
Magnavox Display Systems
Ft Wayne, IN
Mohawk Data Sciences Corp
Parsippany, NJ
NCR Corp
Dayton, OH
NEC Information Systems Inc
Lexington, MA

To find local sales offices of companies, turn to **Vendor Directory, page 301.**

New England Telephone & Telegraph Co
Boston, MA
Nicolet Zeta Corp
Concord, CA
Northern Telecom Systems Corp
Minnetonka, MN
Olivetti Corp of America
New York, NY
Perkin-Elmer
Oceanport, NJ
Pertec Computer Corp
CSD Div
Los Angeles, CA
Plessey Peripheral Systems
Irvine, CA
Polymorphic Systems
Santa Barbara, CA
Prime Computer Inc
Wellesley Hills, MA
Qantel Corporation
Hayward, CA
Racal-Milgo
Miami, FL
Ramtek Corp
Santa Clara, CA
Raytheon Data Systems
Mansfield, MA
Royal Business Machines Inc
Hartford, CT
SAI Technology Co
San Diego, CA
SCI Systems Inc
Huntsville, AL
Selecterm Inc
Wakefield, MA
Sperry Univac
Blue Bell, PA
Sperry Univac, MCO
Irvine, CA
Tally Corp
Kent, WA
Tektronix Inc
Beaverton, OR
Termiflex Corp
Nashua, NH
Terminal Specialties Inc
Salt Lake City, UT
Trivex Inc
A Mohawk Data Sciences Co
Costa Mesa, CA
Wang Laboratories Inc
Lowell, MA
Western Telematic Inc
Santa Ana, CA

REMOTE LINE PRINTERS

AIR LAND SYSTEMS CORP

Fairfax, VA ADV PG 152

CAL DATACOM

Santa Ana, CA ADV PG 138

CENTRONICS DATA COMPUTER CORP

Hudson, NH ADV PG 133

DATA GENERAL CORP

Westboro, MA ADV PGS 37,38

DATAPPOINT CORP

San Antonio, TX ADV PG 107

DOCUMENTATION INC

Melbourne, FL ADV PG 142

GENERAL ELECTRIC —

INSTRUMENTATION & COMMUNICATIONS EQUIP SERVICE

Schenectady, NY ADV PGS 163,165

HEWLETT-PACKARD CO

Palo Alto, CA ADV PG 79

INNOVATIVE ELECTRONICS INC

Miami Lakes, FL ADV PG 153

TALLY CORP

Kent, WA ADV PG 137

TEKTRONIX INC

Beaverton, OR ADV PGS 90,91

Air Land Systems Corp

Fairfax, VA

American Used Computer Co
Boston, MA
Anadex Inc
Chatsworth, CA
Applied Systems Corp
St Claire Shores, MI
Bell System
AT&T Assoc Telephone Co
New York, NY
Billings Computer Corporation
Provo, UT
Boston Financial & Equity Corp
Boston, MA
The Braegen Corp
Cupertino, CA
Cado Systems Corp
Torrance, CA
Cal Datacom
Santa Ana, CA
California Computer Products Inc
Anaheim, CA
Centronics Data Computer Corp
Hudson, NH
Cincinnati Bell
Cincinnati, OH
Comtek Inc
San Antonio, TX
Comten Inc
St Paul, MN
Continental Resources Inc
Bedford, MA
Data Communications Corp
Memphis, TN
Data General Corp
Westboro, MA
Datametrics Corp
Van Nuys, CA
Datapoint Corp
San Antonio, TX
Data Printer Corp
Malden, MA
Dataproducts Corporation
Woodland Hills, CA
Data Rentals/Sales Inc
Culver City, CA
Dataroyal
Nashua, NH
Digital Associates Corp
Stamford, CT
Digital Datacom Inc
Irvine, CA
Digital Equipment Corporation
Marlboro, MA
Digital Systems Corp
Walkersville, MD
Dobson Woodbury Research Inc
Salt Lake City, UT
Documation Inc
Melbourne, FL
Durango Systems
San Jose, CA
Electronic Interface Assoc Inc
New York, NY
Extel Corp.
Northbrook, IL
First Computer Corp
Westmont, IL
Florida Data Corp
Melbourne, FL
General Electric Co
Data Comm Prod Dept
Waynesboro, VA
General Electric — Instrumentation & Communications Equip Service
Schenectady, NY
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co. of the Southwest
San Angelo, TX
Hetra Computer & Communications Industries Inc
Melbourne, FL
Hewlett-Packard Co
Palo Alto, CA

Honeywell Information Systems
Waltham, MA
Innovative Electronics Inc
Miami Lakes, FL
Intelligent Systems Corp
Norcross, GA
Interface Mechanisms Inc
Lynnwood, WA
Interface Systems Inc
Ann Arbor, MI
LRC Inc
Riverton, WY
Memorex Corp
Cupertino, CA
MTI Sales Corp
Great Neck, NY
NCR Corp
Dayton, OH
NEC Information Systems Inc
Lexington, MA
Northern Telecom Systems Corp
Minnetonka, MN
Okidata Corp
Mt Laurel, NJ
Olivetti Corp of America
New York, NY
Paradyne Corp
Largo, FL
Plessey Peripheral Systems
Irvine, CA
Printronic Inc
Irvine, CA
Qantel Corporation
Hayward, CA
Quad Systems Inc
Rockville, MD
Qume Corp
San Jose, CA
Rental Electronics Inc
Palo Alto, CA
Royal Business Machines Inc
Hartford, CT
Selenar Corp
Santa Clara, CA
South Central Bell Telephone Co
Birmingham, AL
Southern New England Telephone Co
New Haven, CT
Southwestern Bell Telephone Co
St Louis, MO
Sperry Univac
Blue Bell, PA
Tally Corp
Kent, WA
Tektronix Inc
Beaverton, OR
Teletype Corp
Skokie, IL
Telex Marketing Company
Culver City, CA
Terminal Specialties Inc
Salt Lake City, UT
Texas Instruments
Dig Sys Div
Houston, TX
Trans Net Corp
Union, NJ
Triplex Inc
A Mohawk Data Sciences Co
Costa Mesa, CA
Unicom Computer Corporation
Sausalito, CA
Vardon & Associates
Irving, TX
W A Brown Instruments
Orlando, FL
Wordstream Corporation
New York, NY
Zeta Corporation
Gaithersburg, MD

For local phone numbers of companies, turn to **Vendor Directory, page 301.**

REMOTE JOB ENTRY TERMINALS

AIR LAND SYSTEMS CORP
Fairfax, VA **ADV PG 152**
CAL DATACOM
Santa Ana, CA **ADV PG 138**
CENTRONICS DATA COMPUTER CORP
Hudson, NH **ADV PG 133**
DATA GENERAL CORP
Westboro, MA **ADV PGS 37,38**
DATAPoint CORP
San Antonio, TX **ADV PG 107**
DECISION DATA COMPUTER CORP
Horsham, PA **ADV PG 143**
DOCUMATION INC
Melbourne, FL **ADV PG 142**
GENERAL ELECTRIC —
INSTRUMENTATION &
COMMUNICATIONS EQUIP SERVICE
Schenectady, NY **ADV PGS 163,165**
HEWLETT-PACKARD CO
Palo Alto, CA **ADV PG 79**
MOHAWK DATA SCIENCES CORP
Parsippany, NJ **ADV PG 104**
SIEMENS CORP
Iselin, NJ **ADV PGS 130,131**
SYKES DATATRONICS
Rochester, NY **ADV PG 139**
TALLY CORP
Kent, WA **ADV PG 137**
TEC INC
Tucson, AZ **ADV PG 132**
WANG LABORATORIES INC
Lowell, MA **ADV PGS 105,106**

Air Land Systems Corp
Fairfax, VA
American Used Computer Co
Boston, MA
AM Jacquard Systems
Santa Monica, CA
Azurdata Inc
Richland, WA
Beehive International
Salt Lake City, UT
Billings Computer Corporation
Provo, UT
Boston Financial & Equity Corp
Boston, MA
The Braegen Corp
Cupertino, CA
Burroughs Corp
Detroit, MI
Cado Systems Corp
Torrance, CA
Cal Datacom
Santa Ana, CA
Cambridge Telecommunications
Burlington, MA
CD Johnson/Assoc Ltd
Ottawa, ON
Centronics Data Computer Corp
Hudson, NH
Chatsworth Data Corp
Chatsworth, CA
Cincinnati Bell
Cincinnati, OH
Computer Devices Inc
Burlington, MA
Computer-Link Corp
Burlington, MA
Computer Transceiver Systems Inc
Paramus, NJ
Comtec Information Systems Inc
Cumberland, RI
Comtek Inc
San Antonio, TX
Comten Inc
St Paul, MN
Continental Resources Inc
Bedford, MA
Cummins-Allison Corp
Data Sys Div
Elk Grove Village, IL
Custom Terminals Corp
Hauppauge, NY
Danyl Corp
Pennsauken, NJ
Data Communications Corp
Memphis, TN
Data Dimensions Inc
Cos Cob, CT
Data Equipment Inc
Sunnyvale, CA
Data General Corp
Westboro, MA
Datapoint Corp
San Antonio, TX
Dataproducts Corporation
Woodland Hills, CA
Data Rentals/Sales Inc
Culver City, CA
Dataroyal
Nashua, NH
Data Terminals & Communications
Campbell, CA
Decision Data Computer Corp
Horsham, PA
Diablo Systems Inc A Xerox Co
Hayward, CA
Digital Equipment Corporation
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Salt Lake City, UT
Documation Inc
Melbourne, FL
Durango Systems
San Jose, CA
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New York, NY
Extel Corp.
Northbrook, IL
Four-Phase Systems Inc
Cupertino, CA
Gamma Technology Inc
Palo Alto, CA
General Automation
Anaheim, CA
General Electric Co
Data Comm Prod Dept
Waynesboro, VA
General Electric — Instrumentation & Communications Equip Service
Schenectady, NY
General Telephone Co of California
Santa Monica, CA
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co. of the Southwest
San Angelo, TX
Hands-On Terminals Inc
Portland, OR
Harris Corp
Data Communications Div
Dallas, TX
Harris Corp
Composition Systems Div
Melbourne, FL
Hetra Computer & Communications Industries Inc
Melbourne, FL
Hewlett-Packard Co
Palo Alto, CA
Honeywell Information Systems
Waltham, MA
IESI Inc
Seattle, WA
Incoterm Corp
A Subsidiary of Honeywell Inc
Wellesley Hills, MA
Inforex Inc
Burlington, MA
Informer Inc
Los Angeles, CA
Interstate Electronics Corp
Anaheim, CA
Lantor Inc
Playa Del Rey, CA

Micro Applications Systems Inc
Minneapolis, MN
Mohawk Data Sciences Corp
Parsippany, NJ
MTI Sales Corp
Great Neck, NY
NCR Corp
Dayton, OH
Northern Telecom Systems Corp
Minnetonka, MN
Olivetti Corp of America
New York, NY
Paradyne Corp
Largo, FL
PCS Inc
Saline, MI
Perkin-Elmer
Oceanport, NJ
Pertec Computer Corp
CSD Div
Los Angeles, CA
Plessey Peripheral Systems
Irvine, CA
Qantel Corporation
Hayward, CA
Racal-Milgo
Miami, FL
Radian Corp-Unitech Products
Austin, TX
Raytheon Data Systems
Mansfield, MA
Scan-Data Corp
Norristown, PA
SCI Systems Inc
Huntsville, AL
Siemens Corp
Iselin, NJ
South Central Bell Telephone Co
Birmingham, AL
Southwestern Bell Telephone Co
St Louis, MO
Sperry Univac
Blue Bell, PA
Sykes Datatronics
Rochester, NY
Syntest Corporation
Marlboro, MA
Tab Products Co
Palo Alto, CA
Tally Corp
Kent, WA
Techtran Industries
Rochester, NY
TEC Inc
Tucson, AZ
Telecommunications Technology Inc
Sunnyvale, CA
Teletype Corp
Skokie, IL
Tel-Tex Inc
Houston, TX
Termiflex Corp
Nashua, NH
Terminal Rentals Inc
Orange, CA
Terminal Specialties Inc
Salt Lake City, UT
Terminal Systems Inc
N Hollywood, CA
Texas Instruments
Dig Sys Div
Houston, TX
TRW Communications Group
Los Angeles, CA
Unicom Computer Corporation
Sausalito, CA
US Instrumental Rentals
San Mateo, CA
Vardon & Associates
Irving, TX
Wang Laboratories Inc
Lowell, MA

Xerox Business Systems
El Segundo, CA
Xycon Computer Systems
Arlington, WA
Zeta Corporation
Gaithersburg, MD

TELEPRINTERS, IMPACT

ALANTHUS DATA COMMUNICATIONS CORP

Rockville, MD ADV PG 134

ANDERSON JACOBSON

San Jose, CA ADV PG 140

CENTRONICS DATA COMPUTER CORP

Hudson, NH ADV PG 133

DATA ACCESS SYSTEMS INC

Mountain Lakes, NJ ADV PG 141

DATA GENERAL CORP

Westboro, MA ADV PGS 37,38

DECISION DATA COMPUTER CORP

Horsham, PA ADV PG 143

HEWLETT-PACKARD CO

Palo Alto, CA ADV PG 79

INNOVATIVE ELECTRONICS INC

Miami Lakes, FL ADV PG 153

PRIME COMPUTER INC

Wellesley Hills, MA ADV PG 103

SIEMENS CORP

Iselin, NJ ADV PGS 130,131

SYSTEMATICS GENERAL CORP

Falls Church, VA ADV PG 135

TALLY CORP

Kent, WA ADV PG 137

Alanthus Data Communications Corp

Rockville, MD

American Terminal Leasing Co

Boston, MA

American Used Computer Co

Boston, MA

AM Jacquard Systems

Santa Monica, CA

Anadex Inc

Chatsworth, CA

Anderson Jacobson

San Jose, CA

Applied Systems Corp

St Claire Shores, MI

Bell System

AT&T Assoc Telephone Co

New York, NY

Billings Computer Corporation

Provo, UT

Boston Financial & Equity Corp

Boston, MA

Carterfone Communications Corp

Dallas, TX

Centronics Data Computer Corp

Hudson, NH

Cincinnati Bell

Cincinnati, OH

C & L Terminals Inc

Portland, OR

CMC Marketing Corp

Houston, TX

ComData Corp

Skokie, IL

CompuTek Inc

Burlington, MA

Computer Products Supply Co

Gaithersburg, MD

Comtec Information Systems Inc

Cumberland, RI

Comten Inc

St Paul, MN

Continental Resources Inc

Bedford, MA

Data Access Systems Inc

Mountain Lakes, NJ

Data Dimensions Inc

Cos Cob, CT

Data Equipment Inc

Sunnyvale, CA

Data General Corp

Westboro, MA

Data Group
Salt Lake City, UT
Dataproducts Corporation
Woodland Hills, CA
Data Rentals/Sales Inc
Culver City, CA
Dataroyal
Nashua, NH
Data Terminals & Communications
Campbell, CA
Decision Data Computer Corp
Horsham, PA
Di/An Controls Inc
Boston, MA
Diablo Systems Inc A Xerox Co
Hayward, CA
Digital Equipment Corporation
Marlboro, MA
Digital Systems Corp
Walkersville, MD
DMC Div
Cetec Corp
Santa Clara, CA
Dobson Woodbury Research Inc
Salt Lake City, UT
Durango Systems
San Jose, CA
Electronic Interface Assoc Inc
New York, NY
Electro Rent
Burbank, CA
Extel Corp
Northbrook, IL
Facit Inc
Greenwich, CT
Florida Data Corp
Melbourne, FL
Garyco Data Systems Inc
Seattle, WA
General Automation
Anaheim, CA
General Electric Co
Data Comm Prod Dept
Waynesboro, VA
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co. of the Southwest
San Angelo, TX
Hands-On Terminals Inc
Portland, OR
Hawaiian Telephone Co
Honolulu, HI
Heath Co
Benton Harbor, MI
Hetra Computer & Communications
Industries Inc
Melbourne, FL
Hewlett-Packard Co
Palo Alto, CA
Honeywell Information Systems
Waltham, MA
Innovative Electronics Inc
Miami Lakes, FL
Integral Data Systems Inc
Natick, MA
ITT Business Sys & Comm Grp
New York, NY
Kleinschmidt
Div SCM
Deerfield, IL
Lantor Inc
Playa Del Rey, CA
Lear Siegler Inc/Data Products Div
Anaheim, CA
Leasametric
Foster City, CA
LRC Inc
Riverton, WY
MPI
Salt Lake City, UT
NEC Information Systems Inc
Lexington, MA
Okidata Corp
Mt Laurel, NJ

Olivetti Corp of America
New York, NY
Paradyne Corp
Largo, FL
Perkin-Elmer Terminals Div
Flanders, NJ
Plessy Peripheral Systems
Irvine, CA
Prime Computer Inc
Wellesley Hills, MA
Racal-Milgo
Miami, FL
RCA Service Co
Data Services
Cherry Hill, NJ
Sanders Technology
Nashua, NH
Selenar Corp
Santa Clara, CA
Siemens Corp
Iselin, NJ
South Central Bell Telephone Co
Birmingham, AL
Southwestern Bell Telephone Co
St Louis, MO
Sweda International
Pine Brook, NJ
Syntest Corporation
Marlboro, MA
Systematics General Corp
Falls Church, VA
Tally Corp
Kent, WA
Teletype Corp
Skokie, IL
Tel-TeX Inc
Houston, TX
Terminal Rentals Inc
Orange, CA
Terminal Specialties Inc
Salt Lake City, UT
Texas Instruments
Dig Sys Div
Houston, TX
Trans-Lux Corp
Norwalk, CT
Trendata Corp
Sunnyvale, CA
Tymnet Inc
Cupertino, CA
Vardon & Associates
Irving, TX
Vector Graphic Inc
Westlake Village, CA
The Western Union Telegraph Co
Upper Saddle River, NJ
Xerox Business Systems
El Segundo, CA
Xycon Computer Systems
Arlington, WA
Zeta Corporation
Gaithersburg, MD

TELEPRINTERS, NON-IMPACT

ALANTHUS DATA COMMUNICATIONS CORP
Rockville, MD **ADV PG 134**
ANDERSON JACOBSON
San Jose, CA **ADV PG 140**
CENTRONICS DATA COMPUTER CORP
Hudson, NH **ADV PG 133**
DATA ACCESS SYSTEMS INC
Mountain Lakes, NJ **ADV PG 141**
HEWLETT-PACKARD CO
Palo Alto, CA **ADV PG 79**
SIEMENS CORP
Iselin, NJ **ADV PGS 130,131**
SPECTRON
Moorestown, NJ **ADV PG 75**
Alanthus Data Communications Corp
Rockville, MD

American Used Computer Co
Boston, MA
Anderson Jacobson
San Jose, CA
Boston Financial & Equity Corp
Boston, MA
Carterfone Communications Corp
Dallas, TX
Centronics Data Computer Corp
Hudson, NH
C & L Terminals Inc
Portland, OR
CMC Marketing Corp
Houston, TX
ComData Corp
Skokie, IL
Computer Devices Inc
Burlington, MA
Computer Transceiver Systems Inc
Paramus, NJ
Continental Resources Inc
Bedford, MA
Data Access Systems Inc
Mountain Lakes, NJ
Data Dimensions Inc
Cos Cob, CT
Datametrics Corp
Van Nuys, CA
Dataproducts Corporation
Woodland Hills, CA
Data Rentals/Sales Inc
Culver City, CA
Digital Equipment Corporation
Marlboro, MA
Digital Systems Corp
Walkersville, MD
Dobson Woodbury Research Inc
Salt Lake City, UT
Electronic Interface Assoc Inc
New York, NY
Electro Rent
Burbank, CA
General Telephone Co of California
Santa Monica, CA
General Telephone Co. of the Southwest
San Angelo, TX
Hands-On Terminals Inc
Portland, OR
Hawaiian Telephone Co
Honolulu, HI
Hewlett-Packard Co
Palo Alto, CA
IESI Inc
Seattle, WA
Lantor Inc
Playa Del Rey, CA
Leasametric
Foster City, CA
Micon Industries
Oakland, CA
NCR Corp
Dayton, OH
Perkin-Elmer Terminals Div
Flanders, NJ
Siemens Corp
Iselin, NJ
Spectron
Moorestown, NJ
Tel-TeX Inc
Houston, TX
Terminal Rentals Inc
Orange, CA
Terminal Specialties Inc
Salt Lake City, UT
Texas Instruments
Dig Sys Div
Houston, TX

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Turn to **UpDate Service Card,**
page 201.

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Cupertino, CA
The Western Union Telegraph Co
Upper Saddle River, NJ
Zeta Corporation
Gaithersburg, MD

TELESCRIBER

Hawaiian Telephone Co
Honolulu, HI
Interstate Electronics Corp
Anaheim, CA
Talos Systems Inc
Scottsdale, AZ
Telautograph Corporation
Los Angeles, CA

TELETYPEWRITERS

ALANTHUS DATA COMMUNICATIONS CORP
Rockville, MD **ADV PG 134**
CAL DATACOM
Santa Ana, CA **ADV PG 138**
DATA ACCESS SYSTEMS INC
Mountain Lakes, NJ **ADV PG 141**
DATA GENERAL CORP
Westboro, MA **ADV PGS 37,38**
GENERAL ELECTRIC —
INSTRUMENTATION &
COMMUNICATIONS EQUIP SERVICE
Schenectady, NY **ADV PGS 163,165**
INNOVATIVE ELECTRONICS INC
Miami Lakes, FL **ADV PG 153**
SIEMENS CORP
Iselin, NJ **ADV PGS 130,131**
TALLY CORP
Kent, WA **ADV PG 137**
Alanthus Data Communications Corp
Rockville, MD
American Terminal Leasing Co
Boston, MA
American Used Computer Co
Boston, MA
Applied Systems Corp
St Claire Shores, MI
Bell System
AT&T Assoc Telephone Co
New York, NY
Boston Financial & Equity Corp
Boston, MA
Cal Datacom
Santa Ana, CA
Carterfone Communications Corp
Dallas, TX
Cincinnati Bell
Cincinnati, OH
ComData Corp
Skokie, IL
Computer Automation
Naked Mini Div
Irvine, CA
Computer Devices Inc
Burlington, MA
Continental Resources Inc
Bedford, MA
Data Access Systems Inc
Mountain Lakes, NJ
Data General Corp
Westboro, MA
Data Rentals/Sales Inc
Culver City, CA
Dataroyal
Nashua, NH
Digital Equipment Corporation
Marlboro, MA
Electronic Interface Assoc Inc
New York, NY
Electro Rent
Burbank, CA
Extel Corp.
Northbrook, IL
Franklin Systems Corp
Westlake Village, CA

Garyco Data Systems Inc
Seattle, WA
General Electric Co
Data Comm Prod Dept
Waynesboro, VA
General Electric — Instrumentation &
Communications Equip Service
Schenectady, NY
General Telephone Co. of the Southwest
San Angelo, TX
General Telephone Co of Wisconsin
Sun Prairie, WI
Hands-On Terminals Inc
Portland, OR
Hawaiian Telephone Co
Honolulu, HI
Informer Inc
Los Angeles, CA
Innovative Electronics Inc
Miami Lakes, FL
ITT Business Sys & Comm Grp
New York, NY
Kleinschmidt
Div SCM
Deerfield, IL
Lantor Inc
Playa Del Rey, CA
Micon Industries
Oakland, CA
Modular Computer Systems
Fort Lauderdale, FL
MTI Sales Corp
Great Neck, NY
NEC Information Systems Inc
Lexington, MA
New England Telephone & Telegraph Co
Boston, MA
Nuclear Engineering Services Co
Sunnyvale, CA
Olivetti Corp of America
New York, NY
Qantel Corporation
Hayward, CA
RCA Global Communications Inc
New York, NY
Selecterm Inc
Wakefield, MA
Sideral Corp
Portland, OR
Siemens Corp
Iselin, NJ
South Central Bell Telephone Co
Birmingham, AL
Southwestern Bell Telephone Co
St Louis, MO
Sperry Univac, MCO
Irvine, CA
Tally Corp
Kent, WA
Teletype Corp
Skokie, IL
Telex Marketing Company
Culver City, CA
Tel-Tex Inc
Houston, TX
Terminal Rentals Inc
Orange, CA
Terminal Specialties Inc
Salt Lake City, UT
Terminal Systems Inc
N Hollywood, CA
Texas Instruments
Dig Sys Div
Houston, TX
Trans Net Corp
Union, NJ
Trendata Corp
Sunnyvale, CA
Tymnet Inc
Cupertino, CA
Utec Corp
Clifton, NJ

Vardon & Associates
Irving, TX
The Western Union Telegraph Co
Upper Saddle River, NJ
Xerox Business Systems
El Segundo, CA

TERMINAL CONTROLLERS

AIR LAND SYSTEMS CORP
Fairfax, VA **ADV PG 152**
GENERAL ELECTRIC —
INSTRUMENTATION &
COMMUNICATIONS EQUIP SERVICE
Schenectady, NY **ADV PGS 163,165**
TEKTRONIX INC
Beaverton, OR **ADV PGS 90,91**

Air Land Systems Corp
Fairfax, VA
Ann Arbor Terminals
Ann Arbor, MI
Applied Systems Corp
St Claire Shores, MI
The Braegen Corp
Cupertino, CA
Bunker Ramo Corp/Info Sys Div
Trumbull, CT
Burroughs Corp
Detroit, MI
Cambridge Telecommunications
Burlington, MA
Carterfone Communications Corp
Dallas, TX
CD Johnson/Assoc Ltd
Ottawa, ON
Cincinnati Bell
Cincinnati, OH
Data Plus Inc
Springfield, VA
Datatrol Inc
Hudson, MA
Digital Datacom Inc
Irvine, CA
Digital Equipment Corporation
Marlboro, MA
Dobson Woodbury Research Inc
Salt Lake City, UT
Epic Data Corp
Richmond, BC
General Electric — Instrumentation &
Communications Equip Service
Schenectady, NY
Harris Corp
Composition Systems Div
Melbourne, FL
Hawaiian Telephone Co
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Industries Inc
Melbourne, FL
ITT Courier Terminal Systems Inc
Tempe, AZ
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Waltham, MA
Memorex Corp
Cupertino, CA
MTI Sales Corp
Great Neck, NY
NCR Corp
Dayton, OH
Northern Telecom Systems Corp
Minnetonka, MN
Pulsecom Div/Harvey Hubbell
Falls Church, VA
RCA Global Communications Inc
New York, NY
SCI Systems Inc
Huntsville, AL
Selenar Corp
Santa Clara, CA
Sideral Corp
Portland, OR
Signetics Inc
Sunnyvale, CA

Southern New England Telephone Co
New Haven, CT
Standard Microsystems
Hauppauge, NY
Tektronix Inc
Beaverton, OR
Trivex Inc
A Mohawk Data Sciences Co
Costa Mesa, CA
Zeta Corporation
Gaithersburg, MD

VIDEO DATA TERMINALS (KSR)

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CORP
Rockville, MD **ADV PG 134**
ANDERSON JACOBSON
San Jose, CA **ADV PG 140**
CAL DATACOM
Santa Ana, CA **ADV PG 138**
DATA ACCESS SYSTEMS INC
Mountain Lakes, NJ **ADV PG 141**
DATA GENERAL CORP
Westboro, MA **ADV PGS 37,38**
DATAPoint CORP
San Antonio, TX **ADV PG 107**
GENERAL ELECTRIC —
INSTRUMENTATION &
COMMUNICATIONS EQUIP SERVICE
Schenectady, NY **ADV PGS 163,165**
HEWLETT-PACKARD CO
Palo Alto, CA **ADV PG 79**
PRIME COMPUTER INC
Wellesley Hills, MA **ADV PG 103**
SPECTRON
Moorestown, NJ **ADV PG 75**
TALLY CORP
Kent, WA **ADV PG 137**
TEC INC
Tucson, AZ **ADV PG 132**
TEKTRONIX INC
Beaverton, OR **ADV PGS 90,91**
WANG LABORATORIES INC
Lowell, MA **ADV PGS 105,106**
Alanthus Data Communications Corp
Rockville, MD
Alpex Computer Corp
Danbury, CT
American Terminal Leasing Co
Boston, MA
American Used Computer Co
Boston, MA
AM Jacquard Systems
Santa Monica, CA
Anderson Jacobson
San Jose, CA
Ann Arbor Terminals
Ann Arbor, MI
Applied Digital Data Systems Inc
Hauppauge, NY
Applied Systems Corp
St Claire Shores, MI
Beehive International
Salt Lake City, UT
Billings Computer Corporation
Provo, UT
Boston Financial & Equity Corp
Boston, MA
The Braegen Corp
Cupertino, CA
Burroughs Corp
Detroit, MI
Cado Systems Corp
Torrance, CA
Cal Datacom
Santa Ana, CA
Carterfone Communications Corp
Dallas, TX
Cincinnati Bell
Cincinnati, OH
C & L Terminals Inc
Portland, OR
CMC Marketing Corp
Houston, TX

ComData Corp
Skokie, IL
Complete Computer Systems
Horsham, PA
Compression Labs Inc
Cupertino, CA
Computer Automation
Naked Mini Div
Irvine, CA
Computer Products Supply Co
Gaithersburg, MD
Continental Resources Inc
Bedford, MA
Data Access Systems Inc
Mountain Lakes, NJ
Data Communications Corp
Memphis, TN
Data Dimensions Inc
Cos Cob, CT
Data Equipment Inc
Sunnyvale, CA
Data General Corp
Westboro, MA
Datamedia Corp
Pennsauken, NJ
Datapoint Corp
San Antonio, TX
Data Rentals/Sales Inc
Culver City, CA
Data Terminals & Communications
Campbell, CA
Delta Data Systems
Cornwell Heights, PA
Digi-Log Systems Inc
Network Control Div
Horsham, PA
Digital Equipment Corporation
Marlboro, MA
Digital Systems Corp
Walkersville, MD
Electronic Interface Assoc Inc
New York, NY
Electro Rent
Burbank, CA
Extel Corp.
Northbrook, IL
Four-Phase Systems Inc
Cupertino, CA
Garyco Data Systems Inc
Seattle, WA
General Electric — Instrumentation & Communications Equip Service
Schenectady, NY
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co of Wisconsin
Sun Prairie, WI
Harris Corp
Data Communications Div
Dallas, TX
Hawaiian Telephone Co
Honolulu, HI
Hazelton Corp
Greenlawn, NY
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Norcross, GA
Intertec Data Systems Corporation
Columbia, SC
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Tempe, AZ

Lantor Inc
Playa Del Rey, CA
Lear Siegler Inc/Data Products Div
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Leasametric
Foster City, CA
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Cupertino, CA
Modular Computer Systems
Fort Lauderdale, FL
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Great Neck, NY
NCR Corp
Dayton, OH
New England Telephone & Telegraph Co
Boston, MA
Northern Telecom Systems Corp
Minnetonka, MN
Olivetti Corp of America
New York, NY
PCS Inc
Saline, MI
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Flanders, NJ
Phone 1 Inc
Rockford, IL
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Div Plessey Inc
Fairfield, NJ
Plessey Peripheral Systems
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Soroc
Anaheim, CA
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Southwestern Bell Telephone Co
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Moorestown, NJ
Sperry Univac
Blue Bell, PA
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Skokie, IL
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Terminal Data Corp
Rockville, MD

Terminal Rentals Inc
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Terminal Specialties Inc
Salt Lake City, UT
Terminal Systems Inc
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Dig Sys Div
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Union, NJ
Trivex Inc
A Mohawk Data Sciences Co
Costa Mesa, CA
Tymnet Inc
Cupertino, CA
Utec Corp
Clifton, NJ
Vardon & Associates
Irving, TX
Vector Graphic Inc
Westlake Village, CA
W A Brown Instruments
Orlando, FL
Wang Laboratories Inc
Lowell, MA
Wavetek Data Communications
San Diego, CA
Wordstream Corporation
New York, NY
Xyon Computer Systems
Arlington, WA

VIDEO DATA TERMINALS (RO)

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DATA ACCESS SYSTEMS INC
Mountain Lakes, NJ ADV PG 141
DATA GENERAL CORP
Westboro, MA ADV PGS 37,38
DATAPOINT CORP
San Antonio, TX ADV PG 107
GENERAL ELECTRIC —
INSTRUMENTATION &
COMMUNICATIONS EQUIP SERVICE
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Wellesley Hills, MA ADV PG 103
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Moorestown, NJ ADV PG 75
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Kent, WA ADV PG 137
TEC INC
Tucson, AZ ADV PG 132
WANG LABORATORIES INC
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Hauppauge, NY
Beehive International
Salt Lake City, UT
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Display Devices
Newport Beach, CA
Boston Financial & Equity Corp
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The Braegen Corp
Cupertino, CA
Burroughs Corp
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Cincinnati Bell
Cincinnati, OH
C & L Terminals Inc
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that makes it?
Turn to **Vendor Directory**,
page 301.

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Mountain Lakes, NJ
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Cos Cob, CT
Data General Corp
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Datamedia Corp
Pennsauken, NJ
Datapoint Corp
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Burlington, MA
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Leasametric
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Lexicon Inc
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Dataroyal
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Dest Data Corp
Sunnyvale, CA
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Newton, MA
Dobson Woodbury Research Inc
Salt Lake City, UT
Lexitron Corp
Chatsworth, CA
MFE Corp
Salem, NH
Wordstream Corporation
New York, NY

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DATAPPOINT CORP
San Antonio, TX **ADV PG 107**
MOHAWK DATA SCIENCES CORP
Parsippany, NJ **ADV PG 104**
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Rochester, NY **ADV PG 139**
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Lowell, MA **ADV PGS 105,106**
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Santa Monica, CA
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Santa Ana, CA
Billings Computer Corporation
Provo, UT
Burroughs/Redactron Corp
Yaphank, NY

Burroughs Corp
Detroit, MI
Cado Systems Corp
Torrance, CA
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Ottawa, ON
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Computer Devices Inc
Burlington, MA
Computer Products Supply Co
Gaithersburg, MD
CPT Corp
Hopkins, MN
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Data General Corp
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Data Terminals & Communications
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Melbourne, FL
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Tel-Tex Inc
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Terminal Specialties Inc
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Whatever your data communications need, Siemens has the terminal to meet it... reliably, continuously, quietly.

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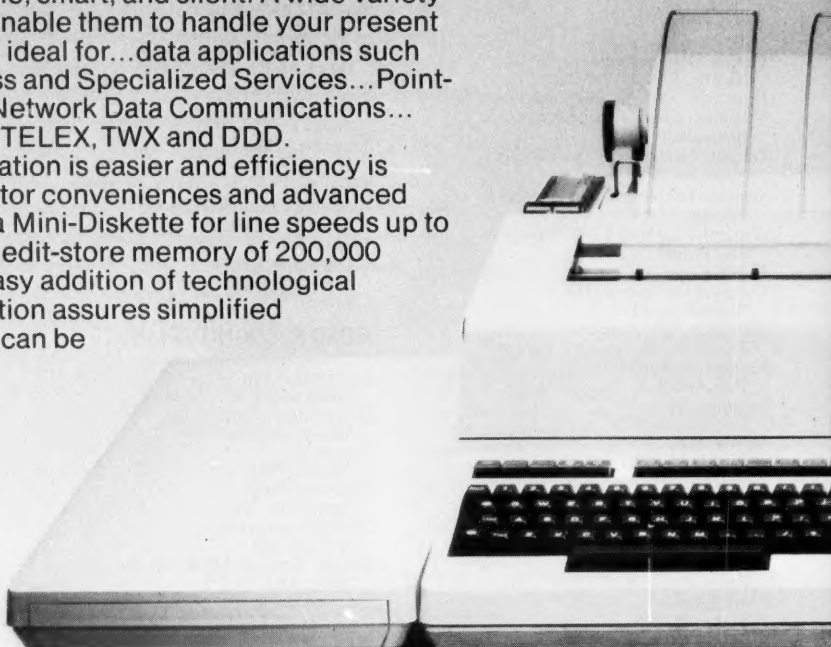
For further information
contact Mr. P. Bartuska:

Siemens Corporation
Data Communications Division
186 Wood Avenue South
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The T-1000 Telex or Private Wire Terminal

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ENVAX/1000 Series features:

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- contained in PROM-up to 32K
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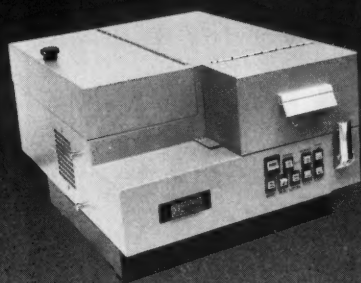
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data communications

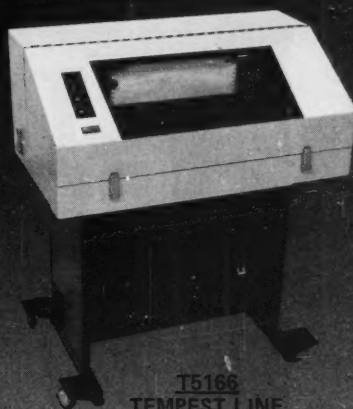
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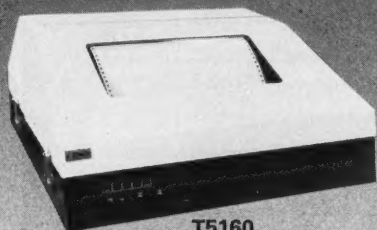
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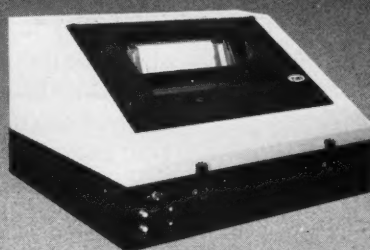
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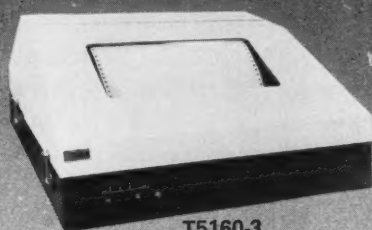
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T5160
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PRINTER 60 CPS



T5103
TEMPEST IMPACT
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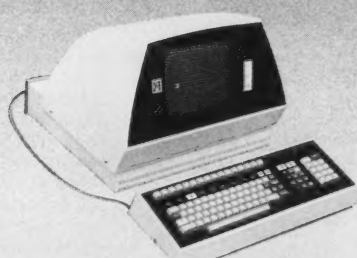
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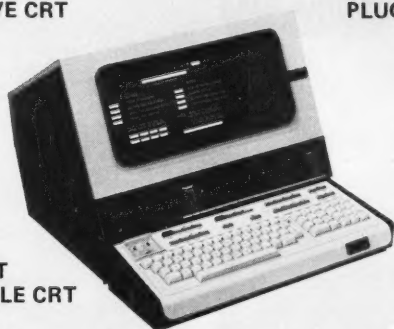
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NEW

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NEW

Extel† — 10 & 30 cps

A lot more electronic, a lot less mechanical, and smaller than other teleprinter equipment. Available with ribbon or ribbonless. Dependable, day-to-day reliability. As low as \$47 per month on a 3-yr. lease, including maintenance.

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Yes, Tally is the best teleprinter!

Witness the Quick Tear that saves money by saving forms!

The Quick Tear option stops wasted forms, wasted money. It saves throughput time, operator time and customer time. Now you can remove a completed form after printing without wasting the next form. And for batch work, you can by-pass the quick tear assembly for continuous print runs.

Unique to Tally alone, the quick tear can accommodate variable width forms from 4 to 15 inches wide. The pin-feed tractors are adjustable from

either side of the carriage. Print an original plus five sharp carbon copies. And Tally teleprinter operators give testimony to quieter operation, better key action and heftier construction.

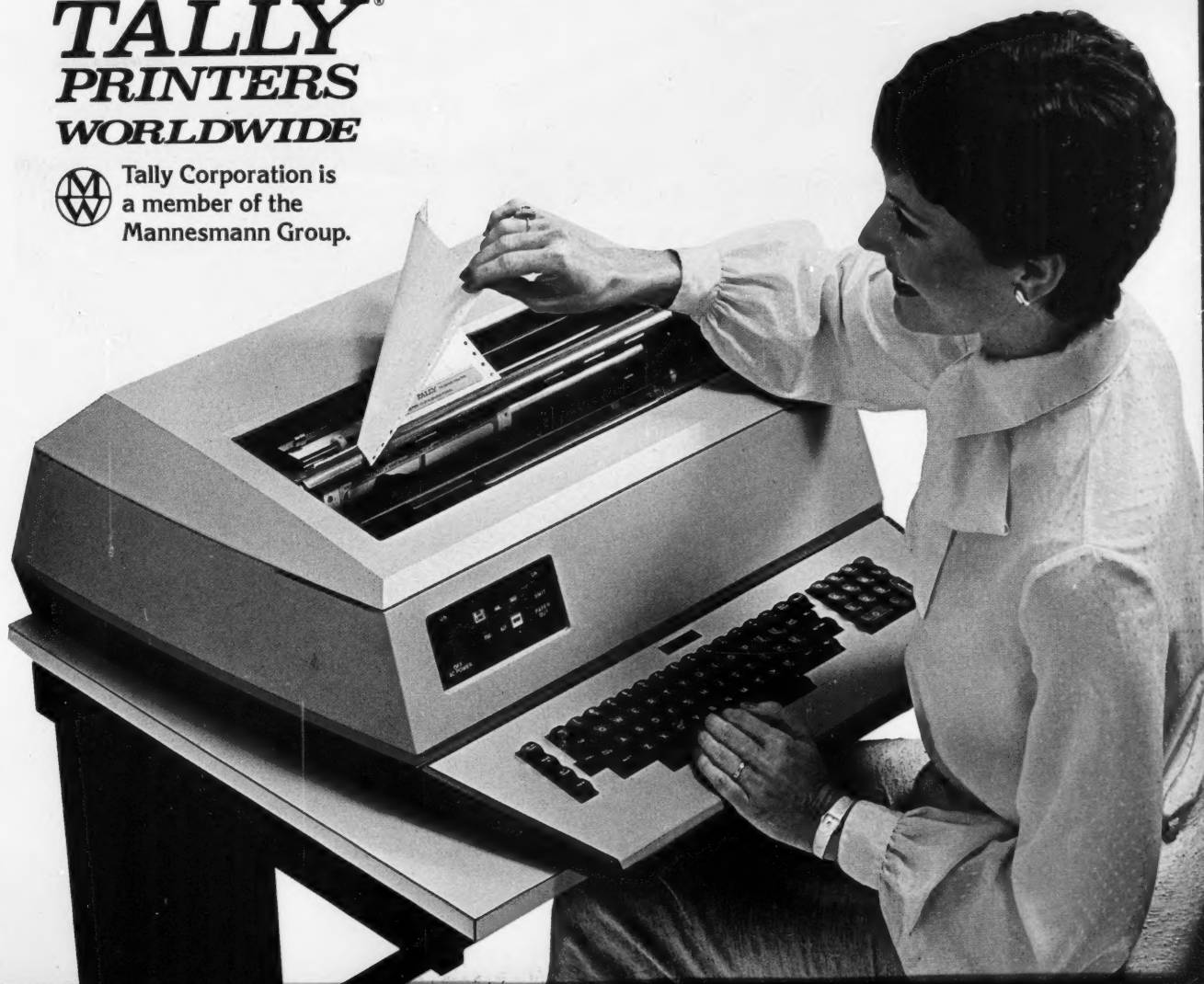
The Quick Tear is only one of many valuable options available with the T-1612 printer terminal. Contact your local Tally dealer for all the details.

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4 Machines in 1

TELEX, TWX, DDD and Private Line Networks

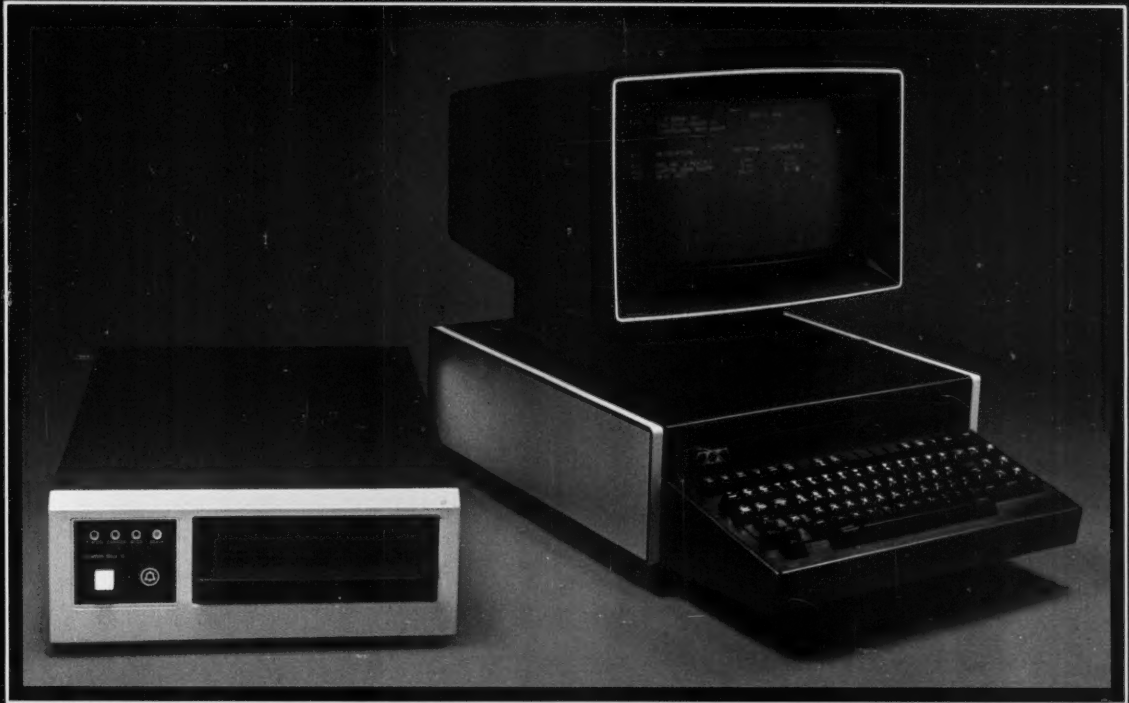


- A low-speed (50/110/300 BAUD) data communications terminal that combines TELEX, TWX, DDD, and private line networks into one compact unit.
- Includes an expandable buffer memory (up to 20,000 characters internally) with full text-editing ability, and MANY OTHER EXCITING FEATURES, such as self test . . . built-in modem . . . TELEX, TWX, DDD, and RS-232-type interfaces . . . automatic, unattended transmission . . . auto-dial/redial . . . half- or full-duplex . . . back-up battery for memory . . . private code for polling . . . built-in time/date clock . . . 14-key numeric pad . . .
- **MOST IMPORTANT** . . . the CAL DATACOM 300 teleprinter is priced to appeal to single as well as multi-network users.
- For more information, call: (714) 540-8553 in Southern California; California toll-free: (800) 432-7212; US toll-free: (800) 854-0171; TELEX: 685-667; TWX: (910) 595-1991.

Cal Datacom
1884 Carnegie Avenue
Santa Ana, California 92705



Data Terminal Enhancement from the Bell System



The Comm-Stor® II Communications Storage Unit, offered by the Bell System, is a sophisticated yet low-cost data entry station that provides diskette data storage and flexible data communications for terminals.

The Comm-Stor II Communications Storage Unit enhances the Dataspeed® 40/1 terminal, the Dataspeed 40/2 terminal, the 43 Teleprinter, and other asynchronous data terminals. Data transmission is in the asynchronous and isochronous mode with a variety of protocols.

*Trademark of AT&T Co.

Some of the capabilities built into the Comm-Stor II include: one or two 250,000-character diskette drives, text editing, selective file retrieval, data validation, and diskette data conversion to the 3740 data exchange format.

Applications now running on the Comm-Stor II Communications Storage Unit include:

- Order entry with data validation
- Mechanized time and work reporting
- Remote data collection
- ESS switching equipment
- Administrative messages
- PBX (SMDR)
- On-line backup
- Funds transfer
- Security systems
- Transportation logistics
- 3740 data exchange

The Comm-Stor II Communications Storage Unit has been evaluated by AT&T and found to be technically suitable for use by the Bell System. For more information, including availability in your area, please contact your Bell System Account Executive. The service is subject to equipment availability and tariff approval.

The Comm-Stor II Communications Storage Unit is supplied to the Bell System by

SYKES

Sykes Datatronics, Inc.
375 Orchard Street
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Our new display terminal has a great supporting cast.



The AJ 510, the most versatile CRT terminal in its class, excels at interactive timesharing and a lot of other jobs. And with the addition of these supporting AJ products, you can greatly expand your application flexibility.

Start with the AJ 510

As a stand-alone device, the AJ 510 is ideal for jobs such as data entry, text editing, order entry, and graphics. It includes such features as ASCII, Graphics, and optional APL character sets; a bright 15-inch screen; 16 video enhancements; editing capability; a format mode with protected fields; and communications rates up to 9600 bps.

Now add data storage

For convenient, low-cost data storage and retrieval, the AJ 460 Micro Diskette System offers you local data manipulation and high-speed on-line communications. Combined with the AJ 510, the AJ 460 helps you reduce telephone charges and computer connect time, while further increasing application flexibility.

And top quality printing

Connect an AJ 832/RO receive-only printer and you get letter-quality hard copy output. Features include selectable data rates up to 45 cps, dual pitch selection,

vertical forms control, and more—even interchangeable “daisy” wheel printing elements so you can customize the type face to the application. Now you have a system that’s ideal for form letters, contracts, and camera-ready art of all kinds.

And communications

Finally, from the wide range of AJ couplers and modems, select the one that best fits your application. The AJ 1234 coupler/modem, for example, lets you take advantage of full duplex 1200 bps communications over dial-up or two-wire leased lines.

The final act

We not only build all this equipment, we also lease, sell, and service it. We’ll take care of it throughout its lifetime. Which makes life easier for you.

So whether you need a stand-alone terminal or one with a strong supporting cast, AJ has the answer. Get in touch with the AJ regional office nearest you: San Jose (408) 946-2900; Chicago (312) 671-7155; Hackensack (201) 488-2525. Or write Anderson Jacobson, Inc., 521 Charcot Avenue, San Jose, California 95131.

Also available through AJ subsidiaries in Ottawa, Ontario; Paris, France; Shepperton, Middlesex, U.K.; and distributors throughout Europe.



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TWO FOR ONE



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INCORPORATED

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But you don't want to print faster just to finish sooner. You want to be able to get more done in a work day.

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For an outright purchase, we can save you as much as \$2,275 on each unit. With our five-year lease/rental — a term IBM won't discuss — you could come out more than \$3,000 ahead.

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For more information, call 215-674-3300. Or write — Decision Data Computer Corporation, 100 Witmer Road, Horsham, PA 19044.



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Switches, data communications, manual
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 San Antonio, TX **ADV PG 107**
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 Electronic Interface Assoc Inc
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 Lexington, KY
 Hawaiian Telephone Co
 Honolulu, HI
 Master Specialties Co
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 Megadata Corp
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 MFE Corp
 Salem, NH
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 Dayton, OH
 Novation Inc
 Tarzana, CA
 Omnitec Data
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 Panafax Corp

Woodbury, NY
 Paradyne Corp
 Largo, FL
 Periphonics Corp
 Bohemia, NY
 RCA Global Communications Inc
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 Syntech Corp
 Rockville, MD
 Tandem Computers
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 Wavetek Data Communications
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New York, NY

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Cincinnati, OH

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DASA Corp
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North Vancouver, BC

Hawaiian Telephone Co
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Bohemia, NY

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Omnitec Data
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SPECTRON
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Omnitec Data
Phoenix, AZ

Spectron
Moorestown, NJ

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Cupertino, CA

Tek-Com
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Sturbridge, MA

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Times Wire & Cable
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Wallingford, CT

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Expandor Inc
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Sherwood Digital Electronics Corp
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Tustin, CA **ADV PG 74**
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Hawaiian Telephone Co
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Costa Mesa, CA
Muirhead Inc
Mountainside, NJ
National Data Corp.
Atlanta, GA
National Electric Cable
Elk Grove Village, IL

To find local sales offices of companies, turn to **Vendor Directory, page 301.**

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NuData Corp
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San Ramon, CA
PCS Inc
Saline, MI
Plessey Peripheral Systems
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Boston Financial & Equity Corp
Boston, MA
Bunker Ramo/Electronic Systems
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New York, NY
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Danbury, CT
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co of Wisconsin
Sun Prairie, WI
Hawaiian Telephone Co
Honolulu, HI
Intertel Inc
Burlington, MA
MSI Data Corp
Costa Mesa, CA
Multi-Tech Systems Inc
New Brighton, MN
NCR Corp
Dayton, OH
Omni-tec Data
Phoenix, AZ
Panafax Corp
Woodbury, NY
Penril Corp
Data Communications Div
Rockville, MD
Pulsecom Div/Harvey Hubbell
Falls Church, VA
Tek-Com
San Jose, CA
Terminal Specialties Inc
Salt Lake City, UT
Universal Data Systems Inc
Huntsville, AL
Vardon & Associates
Irving, TX
Ven-Tel Inc
Santa Clara, CA
Wavetek Data Communications
San Diego, CA
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Miami Lakes, FL **ADV PG 153**
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Cygnus Technologies Corp
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Data Flo
Hopkins, MN
Electronic Interface Assoc Inc
New York, NY
Innovative Electronics Inc
Miami Lakes, FL
Quad Systems Inc
Rockville, MD
Rapi-com Inc
Santa Clara, CA

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Moorestown, NJ **ADV PG 75**
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A D C Magnetix Controls Co
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Springfield, VA
Electronic Interface Assoc Inc
New York, NY
Expander Inc
Pittsburgh, PA
General Telephone Co of Kentucky
Lexington, KY
Hawaiian Telephone Co
Honolulu, HI
Inmac
Santa Clara, CA
International Data Sciences
Lincoln, RI
Lynn Electronics Corp
Feasterville, PA
National Electric Cable
Elk Grove Village, IL
NCR Corp
Dayton, OH
Spectron
Moorestown, NJ
Support Systems International
Richmond, CA
T-Bar Inc
Wilton, CT
Telecommunications Techniques Corp
Rockville, MD
Termiflex Corp
Nashua, NH

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Bohemia, NY
American Satellite Corp
Germantown, MD
Applied Systems Corp
St Claire Shores, MI
Bunker Ramo/Electronic Systems
Westlake Village, CA
Codex Corporation
Mansfield, MA
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New York, NY
Datotek Inc
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Dobson Woodbury Research Inc
Salt Lake City, UT
Electronic Interface Assoc Inc
New York, NY
EMR Data Systems
Sarasota, FL
Fairchild Camera & Instrument
Mountain View, CA
Fairchild Space & Electronics Company
Germantown, MD
International Communications Sciences
Chatsworth, CA
Motorola Gov't Electronics Div
Scottsdale, AZ
Racal-Milgo
Miami, FL
Saber Laboratories Inc
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DATA SECURITY DEVICES—PERSONAL IDENTIFICATION SYSTEMS

**GTE TELENET COMMUNICATIONS
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GNAT Computers, Inc.
San Diego, CA
GTE Telenet Communications Corp
Vienna, VA
Identification Systems Inc
Acton, MA
Master Specialties Co
Costa Mesa, CA
Motorola Gov't Electronics Div
Scottsdale, AZ
Rusco Electronic Systems
Glendale, CA
Schlage Electronics
Sunnyvale, CA

DATA SECURITY DEVICES—SOFTWARE SECURITY MODULES

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Computer Systems Div
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Marlboro, MA
Gamma Technology Inc
Palo Alto, CA
Identification Systems Inc
Acton, MA
Int'l Management Services Inc
Framingham, MA
MSP Inc
Lexington, MA
Wang Laboratories Inc
Lowell, MA

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Autocall Div/Federal Signal Corp
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BRK Electronics
Aurora, IL
Edwards Co
Norwalk, CT
Faraday Inc
Tecumseh, MI
Fenwal Inc
Ashland, MA
Fire-Lite Alarms Inc
New Haven, CT
Grinnell Fire Protection Systems Co
Providence, RI
Kidde Belleville/Div Walter Kidde and Co
Belleville, NJ
Notifier Co
Lincoln, NE
Pyrotechnics
Cedar Knolls, NJ
S H Couch Co
Tecumseh, MI
Standard Electric Time Corp
Springfield, MA
Statitrol/Emerson Electric Co
Lakewood, CO

ERROR CONTROLLERS

INNOVATIVE ELECTRONICS INC
Miami Lakes, FL **ADV PG 153**
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Chatsworth, CA **ADV PGS 32,33**
American Modem Corp
Bohemia, NY
Electronic Interface Assoc Inc
New York, NY

Innovative Electronics Inc
Miami Lakes, FL
Micom Systems Inc
Chatsworth, CA
Robins Industries Corp
Commack, NY
Terminal Systems Inc
N Hollywood, CA
Timeplex Inc
Rochelle Park, NJ

FURNITURE, CABINETS, TERMINAL ENCLOSURES

DATA ACCESS SYSTEMS INC
Mountain Lakes, NJ **ADV PG 141**
RIXON INC
Silver Spring, MD **ADV PG 53**
SPECTRON
Moorestown, NJ **ADV PG 75**
AM Jacquard Systems
Santa Monica, CA
CMC Marketing Corp
Houston, TX
Comark Corp
Waltham, MA
Computer Roomers Inc
Dallas, TX
Data Access Systems Inc
Mountain Lakes, NJ
Data Equipment Inc
Sunnyvale, CA
Electronic Interface Assoc Inc
New York, NY
Gates Acoustinet Inc
Santa Rosa, CA
General Telephone Co of Kentucky
Lexington, KY
Hamilton Sorter Company Inc
Fairfield, OH
Hawaiian Telephone Co
Honolulu, HI
Inmac
Santa Clara, CA
Kybe Corp
Waltham, MA
Maine Manufacturing Company
Nashua, NH
Mini Computer Systems
Anaheim, CA
Minicomputer Systems
Elmsford, NY
Modular Furniture Concepts Inc
Torrance, CA
Optima Div/Scientific-Atlanta
Tucker, GA
Plessey Peripheral Systems
Irvine, CA
Polymorphic Systems
Santa Barbara, CA
RCA Global Communications Inc
New York, NY
Rixon Inc
Silver Spring, MD
Spectron
Moorestown, NJ
Stantron Div
Wyco Metal Prod
N Hollywood, CA
Systems Furniture Co
Los Angeles, CA
Tel-TeX Inc
Houston, TX
Van San Corp
City of Industry, CA
Vector Graphic Inc
Westlake Village, CA
W A Brown Instruments
Orlando, FL
Western Peripherals Inc
Anaheim, CA

The Western Union Telegraph Co
Upper Saddle River, NJ
Word/Data Environments Inc
Baltimore, MD
Wright Line Inc
Worcester, MA

MICROFILM EQUIPMENT, SYSTEMS AND SERVICES

AM Bruning Micrographics
Tustin, CA
Complete Computer Systems
Horsham, PA
Cubic Corp
San Diego, CA
DatagraphiX Inc
San Diego, CA
Eastman Kodak Co
Rochester, NY
Image Systems Inc
Culver City, CA
Information Retrieval Syst Corp
New York, NY
Northwest Microfilm Inc
Minneapolis, MN
Word/Data Environments Inc
Baltimore, MD

MODEM ELIMINATORS

ARK ELECTRONIC PRODUCTS
Melbourne, FL **ADV PG 50**
ASTROCOM CORP
St Paul, MN **ADV PG 52**
GANDALF DATA INC
Wheeling, IL **ADV PG 51**
KAPUSI LABORATORIES
San Mateo, CA **ADV PG 77**
MICOM SYSTEMS INC
Chatsworth, CA **ADV PGS 32,33**
SPECTRON
Moorestown, NJ **ADV PG 75**
TRAN TELECOMMUNICATIONS CORP
Marina Del Rey, CA **ADV PG 97**
UNIVERSAL DATA SYSTEMS INC
Huntsville, AL **ADV PG Cover IV**
VEN-TEL INC
Santa Clara, CA **ADV PG 65**
Applied Delta Systems Inc
Bellmawr, NJ
ARK Electronic Products
Melbourne, FL
Astrocom Corp
St Paul, MN
Avanti Communications Corp
Newport, RI
Cambridge Telecommunications
Burlington, MA
Canoga Data Systems
Canoga Park, CA
Com/Tech Systems
New York, NY
Data Control Systems
Div of General Indicator Corp
Danbury, CT
Data Dimensions Inc
Cos Cob, CT
Data Plus Inc
Springfield, VA
Data Set Cable Co Inc
Ridgefield, CT
DEI-Teleproducts
Escondido, CA
Develcon Electronics Inc
Doylestown, PA

If you want to know what other products a company makes, turn to **Vendor Directory, page 301.**

Digi-Log Systems Inc
Network Control Div
Horsham, PA
Dynatech Data Systems
Springfield, VA
Electrodata Inc
Walton Hills, OH
Electronic Interface Assoc Inc
New York, NY
Expandor Inc
Pittsburgh, PA
Gandalf Data Inc
Wheeling, IL
General Telephone Co of Kentucky
Lexington, KY
Hetra Computer & Communications Industries Inc
Melbourne, FL
Honeywell Information Systems
Waltham, MA
Inmac
Santa Clara, CA
International Data Sciences
Lincoln, RI
Kapus Laboratories
San Mateo, CA
Micom Systems Inc
Chatsworth, CA
NCR Corp
Dayton, OH
Peripherals Corp
Bohemia, NY
Spectron
Moorestown, NJ
Sperry Univac, MCO
Irvine, CA
Syntech Corp
Rockville, MD
Teleprocessing Products Inc
Simi Valley, CA
TRAN Telecommunications Corp
Marina Del Rey, CA
United Data Services Co Inc
Phoenix, AZ
Universal Data Systems Inc
Huntsville, AL
Valtec Corp
West Boylston, MA
Ven-Tel Inc
Santa Clara, CA
Versitron Inc
Washington, DC
Wavetek Data Communications
San Diego, CA

PAPER FOR TERMINALS

ANDERSON JACOBSON
San Jose, CA **ADV PG 140**
DATA ACCESS SYSTEMS INC
Mountain Lakes, NJ **ADV PG 141**
GRAPHIC CONTROLS
COATED PROD DIV
Buffalo, NY **ADV PG 155**
PRIME COMPUTER INC
Wellesley Hills, MA **ADV PG 103**
Anderson Jacobson
San Jose, CA
C & L Terminals Inc
Portland, OR
Computer Products Supply Co
Gaithersburg, MD
Continental Resources Inc
Bedford, MA
Data Access Systems Inc
Mountain Lakes, NJ
Data Communications Corp
Memphis, TN
Data Equipment Inc
Sunnyvale, CA

Datametrics Corp
Van Nuys, CA
Graphic Controls
Coated Prod Div
Buffalo, NY
Hands-On Terminals Inc
Portland, OR
Inmac
Santa Clara, CA
Prime Computer Inc
Wellesley Hills, MA
RCA Global Communications Inc
New York, NY
Selecterm Inc
Wakefield, MA
Telautograph Corporation
Los Angeles, CA
Telex Marketing Company
Culver City, CA
Tel-Tex Inc
Houston, TX
Terminal Rentals Inc
Orange, CA
Terminal Systems Inc
N Hollywood, CA
Trans-Lux Corp
Norwalk, CT
TRW Communications Group
Los Angeles, CA
The Western Union Telegraph Co
Upper Saddle River, NJ

POWER SUPPLIES, UNINTERRUPTIBLE; LINE CORRECTORS, ETC.

ELGAR CORP
San Diego, CA **ADV PG 154**
KAPUSI LABORATORIES
San Mateo, CA **ADV PG 77**
Advanced Electronics Design Inc
Sunnyvale, CA
Behlman Engineering Corp
Carpinteria, CA
Boschert Inc
Sunnyvale, CA
California Instruments
San Diego, CA
Clary Corp
San Gabriel, CA
Complete Computer Systems
Horsham, PA
Cyberex Inc
Mentor, OH
Data Processing Power
Los Angeles, CA
Dranetz Engineering Labs Inc
S Plainfield, NJ
Elgar Corp
San Diego, CA
Exide Electronics Power Products
Philadelphia, PA
Franklin Electric Programmed Power
Sunnyvale, CA
Hitachi America Ltd
Computer Sales & Service Div
San Francisco, CA
Inmac
Santa Clara, CA
Kapusi Laboratories
San Mateo, CA
KeyTek Instrument Corp
Burlington, MA
Lambda Electronics
Melville, NY
Lorain Products Corporation
Lorain, OH
MSI Data Corp
Costa Mesa, CA
Nova Electric Mfg Co
Nutley, NJ

Powertec Inc
Chatsworth, CA
Sola, A unit of General Signal
Elk Grove Vill, IL
Technipower
Division of Penril Corp
Danbury, CT
Teledyne Inet
Marketing Dept
Torrance, CA
Topaz Inc
San Diego, CA

PROTOCOL CONVERTERS

ABLE COMPUTER
Irvine, CA **ADV PG 35**
AIR LAND SYSTEMS CORP
Fairfax, VA **ADV PG 152**
ARK ELECTRONIC PRODUCTS
Melbourne, FL **ADV PG 50**
DATAPOINT CORP
San Antonio, TX **ADV PG 107**
GTE TELENET COMMUNICATIONS
CORP
Vienna, VA **ADV PGS 18,19**
INNOVATIVE ELECTRONICS INC
Miami Lakes, FL **ADV PG 153**
MICOM SYSTEMS INC
Chatsworth, CA **ADV PGS 32,33**
SHERWOOD DIGITAL ELECTRONICS
CORP
Salt Lake City, UT **ADV PG 156**
TRAN TELECOMMUNICATIONS CORP
Marina Del Rey, CA **ADV PG 97**
TRT DATA PRODUCTS INC
NORFIELD COMM DIV
East Norwalk, CT **ADV PG 34**
ABLE Computer
Irvine, CA
Air Land Systems Corp
Fairfax, VA
ARK Electronic Products
Melbourne, FL
Associated Computer Consultants
Santa Barbara, CA
Avanti Communications Corp
Newport, RI
Bolt Beranek & Newman Inc
Computer Systems Div
Cambridge, MA
Cambridge Telecommunications
Burlington, MA
Carterfone Communications Corp
Dallas, TX
Com/Tech Systems
New York, NY
Commex Inc
Crofton, MD
Computerwise Inc
Grandview, MO
CSS Telecommunications
Mountain View, CA
Custom Terminals Corp
Hauppauge, NY
Cygnus Technologies Corp
New York, NY
Data Plus Inc
Springfield, VA
Datapoint Corp
San Antonio, TX
Data Specialties Inc
Northbrook, IL
Data Stream
Brisbane, CA
Digital Datacom Inc
Irvine, CA
DMC Div
Cetec Corp
Santa Clara, CA

Electronic Interface Assoc Inc
New York, NY
Expander Inc
Pittsburgh, PA
Gamma Technology Inc
Palo Alto, CA
GTE Telenet Communications Corp
Vienna, VA
Hands-On Terminals Inc
Portland, OR
Hawaiian Telephone Co
Honolulu, HI
Industrial Computer Controls Inc
Cambridge, MA
Innovative Electronics Inc
Miami Lakes, FL
Kaufman Research
Los Altos Hills, CA
Micom Systems Inc
Chatsworth, CA
MSI Data Corp
Costa Mesa, CA
NuData Corp
Little Silver, NJ
Pulsecom Div/Harvey Hubbell
Falls Church, VA
Quad Systems Inc
Rockville, MD
Sherwood Digital Electronics Corp
Salt Lake City, UT
Sidereal Corp
Portland, OR
Signetics Inc
Sunnyvale, CA
Technipower
Division of Penril Corp
Danbury, CT
Teleprocessing Products Inc
Simi Valley, CA
TRAN Telecommunications Corp
Marina Del Rey, CA
TRT Data Products Inc
Norfield Comm Div
East Norwalk, CT
Utec Corp
Clifton, NJ
Via West
Phoenix, AZ

PULSE AND SIGNAL REGENERATORS

Cincinnati Bell
Cincinnati, OH
Continental Resources Inc
Bedford, MA
Electronic Interface Assoc Inc
New York, NY
Telecommunications Techniques Corp
Rockville, MD

RIBBONS AND SUPPLIES FOR TERMINALS AND PRINTERS

ANDERSON JACOBSON
San Jose, CA **ADV PG 140**
DATA ACCESS SYSTEMS INC
Mountain Lakes, NJ **ADV PG 141**
DATA GENERAL CORP
Westboro, MA **ADV PGS 37,38**
MOHAWK DATA SCIENCES CORP
Parsippany, NJ **ADV PG 104**
Anderson Jacobson
San Jose, CA
Aspen Ribbons
Boulder, CO
C & L Terminals Inc
Portland, OR
CMC Marketing Corp
Houston, TX
Continental Resources Inc
Bedford, MA

Data Access Systems Inc
Mountain Lakes, NJ
Data Communications Corp
Memphis, TN
Data Equipment Inc
Sunnyvale, CA
Data General Corp
Westboro, MA
Digital Associates Corp
Stamford, CT
Inmac
Santa Clara, CA
Mohawk Data Sciences Corp
Parsippany, NJ
RCA Global Communications Inc
New York, NY
Tel-Tex Inc
Houston, TX
Terminal Systems Inc
N Hollywood, CA
Vydec Inc
Florham Park, NJ
The Western Union Telegraph Co
Upper Saddle River, NJ

SATELLITE DELAY COMPENSATION UNITS

American Satellite Corp
Germantown, MD
Bunker Ramo/Electronic Systems
Westlake Village, CA
California Microwave Inc
Sunnyvale, CA
Fairchild Space & Electronics Company
Germantown, MD

SELECTION AND TRANSFER EQUIPMENT—MONITOR AND TEST SWITCHING EQUIPMENT

A D C MAGNETICS CONTROLS CO
Bloomington, MN **ADV PG 76**
CODEX CORPORATION
Mansfield, MA **ADV PGS 81-88**
EPICOM INC
Altamonte Springs, FL **ADV PGS 94,95**
KAPUSI LABORATORIES
San Mateo, CA **ADV PG 77**
SPECTRON
Moorestown, NJ **ADV PG 75**
T-BAR INC
Wilton, CT **ADV PGS 78,157**
TRAN TELECOMMUNICATIONS CORP
Marina Del Rey, CA **ADV PG 97**
A D C Magnetis Controls Co
Bloomington, MN
Applied Delta Systems Inc
Bellmawr, NJ
Atlantic Research Corp
Alexandria, VA
Codex Corporation
Mansfield, MA
Coherent Communications
Central Islip, NY
Continental Resources Inc
Bedford, MA
Cygnus Technologies Corp
New York, NY
Data Check Corp
San Diego, CA
Data Control Systems
Div of General Indicator Corp
Danbury, CT
Data Set Cable Co Inc
Ridgefield, CT
Digi-Log Systems Inc
Network Control Div
Horsham, PA

Dranetz Engineering Labs Inc
S Plainfield, NJ
Dynatech Data Systems
Springfield, VA
Electronic Interface Assoc Inc
New York, NY
Epicom Inc
Altamonte Springs, FL
International Data Sciences
Lincoln, RI
Kapusi Laboratories
San Mateo, CA
Scientific-Atlanta Inc
Satcom Division
Atlanta, GA
Spectron
Moorestown, NJ
Sun Information Services Co
Wayne, PA
T-Bar Inc
Wilton, CT
Telecommunications Techniques Corp
Rockville, MD
TRAN Telecommunications Corp
Marina Del Rey, CA
Utec Corp
Clifton, NJ

SELECTION AND TRANSFER EQUIPMENT—PATCHING EQUIPMENT

A D C MAGNETICS CONTROLS CO
Bloomington, MN **ADV PG 76**
CODEX CORPORATION
Mansfield, MA **ADV PGS 81-88**
EPICOM INC
Altamonte Springs, FL **ADV PGS 94,95**
INTERTEL INC
Burlington, MA **ADV PGS 63,89**
SPECTRON
Moorestown, NJ **ADV PG 75**
T-BAR INC
Wilton, CT **ADV PGS 78,157**
A D C Magnetis Controls Co
Bloomington, MN
Applied Delta Systems Inc
Bellmawr, NJ
Atlantic Research Corp
Alexandria, VA
Codex Corporation
Mansfield, MA
Coherent Communications
Central Islip, NY
Cygnus Technologies Corp
New York, NY
Digi-Log Systems Inc
Network Control Div
Horsham, PA
Dynatech Data Systems
Springfield, VA
Electronic Interface Assoc Inc
New York, NY
Epicom Inc
Altamonte Springs, FL
Expander Inc
Pittsburgh, PA
Hawaiian Telephone Co
Honolulu, HI
International Data Sciences
Lincoln, RI
InterTel Inc
Burlington, MA
Spectron
Moorestown, NJ
T-Bar Inc
Wilton, CT

Telecommunications Techniques Corp
Rockville, MD
Triton Engineering
Gaithersburg, MD

SELECTION AND TRANSFER EQUIPMENT—RECONFIGURATION EQUIPMENT

A D C MAGNETICS CONTROLS CO
Bloomington, MN **ADV PG 76**
CODEX CORPORATION
Mansfield, MA **ADV PGS 81-88**
INTERTEL INC
Burlington, MA **ADV PGS 63,89**
KAPUSI LABORATORIES
San Mateo, CA **ADV PG 77**
SPECTRON
Moorestown, NJ **ADV PG 75**
T-BAR INC
Wilton, CT **ADV PGS 78,157**
TRAN TELECOMMUNICATIONS CORP
Marina Del Rey, CA **ADV PG 97**
A D C Magnetis Controls Co
Bloomington, MN
Applied Delta Systems Inc
Bellmawr, NJ
Atlantic Research Corp
Alexandria, VA
Codex Corporation
Mansfield, MA
Comten Inc
St Paul, MN
Cygnus Technologies Corp
New York, NY
Electrodata Inc
Walton Hills, OH
Electronic Interface Assoc Inc
New York, NY
Expander Inc
Pittsburgh, PA
InterTel Inc
Burlington, MA
Kapusi Laboratories
San Mateo, CA
Spectron
Moorestown, NJ
T-Bar Inc
Wilton, CT
Teleprocessing Products Inc
Simi Valley, CA
TRAN Telecommunications Corp
Marina Del Rey, CA

SWITCHES, DATA COMMUNICATIONS, AUTOMATIC

A D C MAGNETICS CONTROLS CO
Bloomington, MN **ADV PG 76**
DATAPOINT CORP
San Antonio, TX **ADV PG 107**
DIGITAL COMMUNICATIONS CORP
Gaithersburg, MD **ADV PG 79**
GANDALF DATA INC
Wheeling, IL **ADV PG 51**
**GTE TELENET COMMUNICATIONS
CORP**
Vienna, VA **ADV PGS 18,19**
INTERTEL INC
Burlington, MA **ADV PGS 63,89**
KAPUSI LABORATORIES
San Mateo, CA **ADV PG 77**
OMNITEC DATA
Phoenix, AZ **ADV PG 62**
SPECTRON
Moorestown, NJ **ADV PG 75**

For further catalog information, turn to
UpDate Service Card, page 201.

T-BAR INC
Wilton, CT **ADV PGS 78,157**

TRAN TELECOMMUNICATIONS CORP
Marina Del Rey, CA **ADV PG 97**

TRT DATA PRODUCTS INC
NORFIELD COMM DIV
East Norwalk, CT **ADV PG 34**

Action Communication Systems Inc
Dallas, TX

A D C Magnetix Controls Co
Bloomington, MN

American Modem Corp
Bohemia, NY

American Used Computer Co
Boston, MA

Applied Delta Systems Inc
Bellmawr, NJ

Atlantic Research Corp
Alexandria, VA

Avanti Communications Corp
Newport, RI

Boston Financial & Equity Corp
Boston, MA

Cambridge Telecommunications
Burlington, MA

Computer Sciences Corp
El Segundo, CA

Cygnus Technologies Corp
New York, NY

Data Plus Inc
Springfield, VA

Datapoint Corp
San Antonio, TX

Develcon Electronics Inc
Doylestown, PA

Digi-Log Systems Inc
Network Control Div
Horsham, PA

Digital Associates Corp
Stamford, CT

Digital Communications Assoc Inc
Norcross, GA

Digital Communications Corp
Gaithersburg, MD

Digital Telephone Systems Inc
Novato, CA

Electronic Interface Assoc Inc
New York, NY

Gandalf Data Inc
Wheeling, IL

GTE Telenet Communications Corp
Vienna, VA

Hawaiian Telephone Co
Honolulu, HI

Intecom Inc
Dallas, TX

International Data Sciences
Lincoln, RI

Intertel Inc
Burlington, MA

Kapusi Laboratories
San Mateo, CA

Micro Switch Div
Honeywell Inc

Freeport, IL

Muirhead Inc
Mountainside, NJ

Northern Telecom Inc
Nashville, TN

Omnitec Data
Phoenix, AZ

Periphonics Corp
Bohemia, NY

RCA Global Communications Inc
New York, NY

Rockwell-Collins
Dallas, TX

Scientific-Atlanta Inc
Satcom Division

Atlanta, GA

Spectron
Moorestown, NJ

T-Bar Inc
Wilton, CT

Telecommunications Techniques Corp
Rockville, MD

Time & Space Processing Inc
Cupertino, CA

TRAN Telecommunications Corp
Marina Del Rey, CA

TRT Data Products Inc
Norfield Comm Div

East Norwalk, CT

SWITCHES, DATA COMMUNICATIONS, MANUAL

A D C MAGNETICS CONTROLS CO
Bloomington, MN **ADV PG 76**

KAPUSI LABORATORIES
San Mateo, CA **ADV PG 77**

OMNITEC DATA
Phoenix, AZ **ADV PG 62**

RIXON INC
Silver Spring, MD **ADV PG 53**

SPECTRON
Moorestown, NJ **ADV PG 75**

T-BAR INC
Wilton, CT **ADV PGS 78,157**

TRT DATA PRODUCTS INC
NORFIELD COMM DIV
East Norwalk, CT **ADV PG 34**

A D C Magnetix Controls Co
Bloomington, MN

American Modem Corp
Bohemia, NY

American Used Computer Co
Boston, MA

Applied Delta Systems Inc
Bellmawr, NJ

Atlantic Research Corp
Alexandria, VA

Boston Financial & Equity Corp
Boston, MA

Cincinnati Bell
Cincinnati, OH

Comten Inc
St Paul, MN

Cygnus Technologies Corp
New York, NY

Data Set Cable Co Inc
Ridgefield, CT

Digi-Log Systems Inc
Network Control Div

Horsham, PA

Digital Associates Corp
Stamford, CT

EECO Incorporated
Santa Ana, CA

Electrodata Inc
Walton Hills, OH

Electronic Interface Assoc Inc
New York, NY

Expander Inc
Pittsburgh, PA

General Telephone Co of Wisconsin
Sun Prairie, WI

Hawaiian Telephone Co
Honolulu, HI

Inmac
Santa Clara, CA

International Data Sciences
Lincoln, RI

Kapusi Laboratories
San Mateo, CA

Micro Switch Div
Honeywell Inc

Freeport, IL

Muirhead Inc
Mountainside, NJ

Northern Telecom Inc
Nashville, TN

Omnitec Data
Phoenix, AZ

RCA Global Communications Inc
New York, NY

Rixon Inc
Silver Spring, MD

Spectron
Moorestown, NJ

Support Systems International
Richmond, CA

T-Bar Inc
Wilton, CT

Telecommunications Techniques Corp
Rockville, MD

TRT Data Products Inc
Norfield Comm Div

East Norwalk, CT

Versitron Inc
Washington, DC

VOICE ADAPTERS

RIXON INC
Silver Spring, MD **ADV PG 53**

TELESYSTEMS NETWORK INC
Chicago, IL **ADV PG 58**

Applied Delta Systems Inc
Bellmawr, NJ

Master Specialties Co
Costa Mesa, CA

Racal-Milgo
Miami, FL

Rixon Inc
Silver Spring, MD

Telesystems Network Inc
Chicago, IL

Time & Space Processing Inc
Cupertino, CA

VOICE DIGITIZERS

E-Systems Inc
Garland Div

Garland, TX

Harris Corp
Controls Div

Melbourne, FL

International Communications Sciences
Chatsworth, CA

Motorola Semiconductor Prod
Phoenix, AZ

Precision Monolithics Inc
Santa Clara, CA

Signetics Inc
Sunnyvale, CA

Time & Space Processing Inc
Cupertino, CA

Stay up-to-date with new
catalog information and new
product announcements.
Turn to **UpDate Service Card**,
page 201.

Data Communications Interfaces

These Microprocessor Controller Communications interface devices are sold to OEM's, systems distributors, and systems users. They provide code conversion and protocol emulation to enable computers, terminals, printers, word processors and various other peripheral devices to communicate in complex protocol environments. These units are delivered with software programs allowing them to function using IBM, Burroughs, Univac, Honeywell and other communications protocols.

ALS/Microprocessor Controllers—These units have been designed to provide a serial data interface for printers manufactured by Centronics, Printronix, DEC, Data 100, Florida Data and Dataproducts. In form these interfaces are made to plug into and receive their power from the device being interfaced. However, most are available as stand-alone devices with power supply enabling them to function as communications interfaces for a wide range of other peripheral devices. All units feature EIA RS-232 compatible I/O ports, with 20 Ma. current loop available as an option. They may be operated full- or half- duplex in either Synchronous

or Asynchronous mode. Error checking methods, addressing capability, baud rates and buffer sizes are configured to suit particular applications requirements. These MPC's are delivered with protocol software for most major communications line disciplines, with others under development.

ALS/Protocol Converters™—These Protocol Converter™ Units have been designed by Air Land Systems to enable intercommunication of data between two computers or terminals using different protocols. These devices are available with up to 8K of program storage and up to 8K of buffer memory enabling them to provide a communications interface between most communications protocols. The unit is designed to effect code conversion and protocol emulation in either Synchronous or Asynchronous modes full- or half- duplex. Program control over word structure, baud rates, error checking methods and addressing allows these units to function in a wide range of

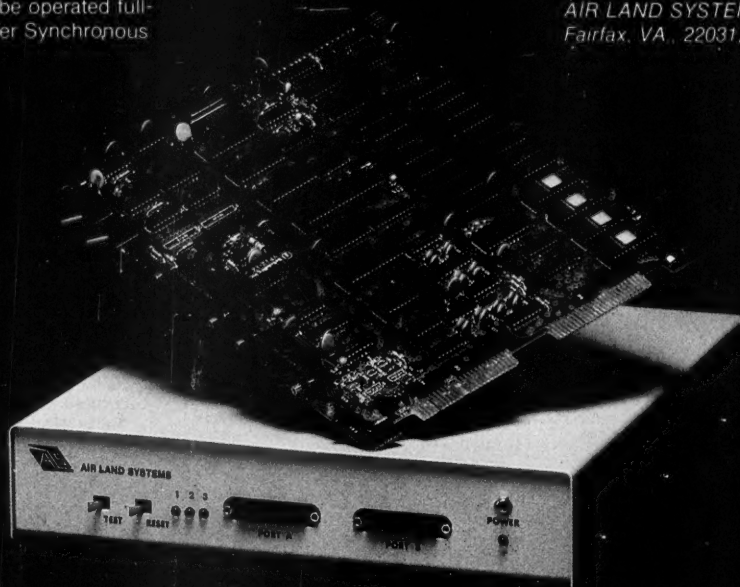
applications. They are delivered with software programs enabling them to function in most communications protocol environments. See protocol software programs listed below.

Cluster Controller Unit—The Model CCU-400 Cluster Control Unit is a microprocessor based controller capable of servicing up to 16 Asynchronous RS232 Terminal Ports and TWO Synchronous Communications Ports. All 18 Serial I/O ports are under direct processor control, thus the interchange of information between the ports is a software function and can be tailored to the user's requirements.

Protocol Conversion Of Software Programs Currently Available. Others Under Development.

IBM 2260	MOHAWK DATA
IBM 2740	MOSYNC
IBM 2741	UNIVAC DCT 1000
IBM 2770	UNIVAC DCT 1004
IBM 2780	HONEYWELL VIP 7700
IBM 3270	BURROUGHS POLL & SELECT
IBM 3780	
IBM 2946 (PARS)	

For more information call or write
AIR LAND SYSTEMS 2820 Dorr Ave.
Fairfax, VA, 22031, 703 573-1100.

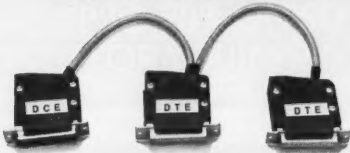


AIR LAND SYSTEMS

Designers of Data Communications Interfaces

COMMUNICATIONS MADE EASY

Diagnostic Loop Back Cables



Loop back diagnostic cables provide for routing all output signals to all input signals. An error condition will be indicated as a specified test number and displayed by the seven segment LED. Further actuation of the diagnostic test switch will allow for fault isolation to the "chip" level. This fault isolation technique eliminates classical "finger pointing" when the network goes down.

Async/Sync RS-232 Serial, Parallel 300 LPM Printers



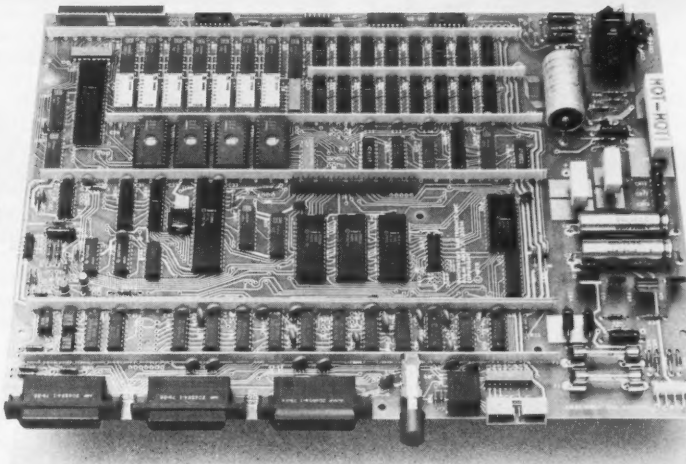
The "Innovator" line printer family consists of both 80 and 132 column printers utilizing the heavy duty impact chain print technology. Fully formed clear upper and lower case characters are generated on up to six copies.

MCS-80 Protocol Converter

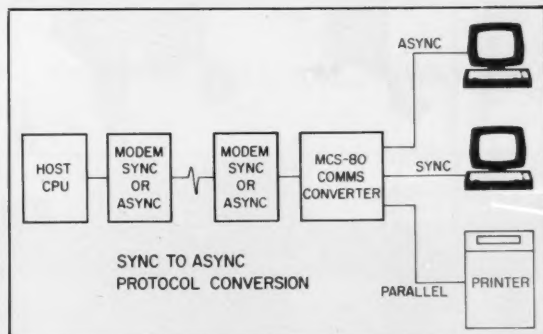
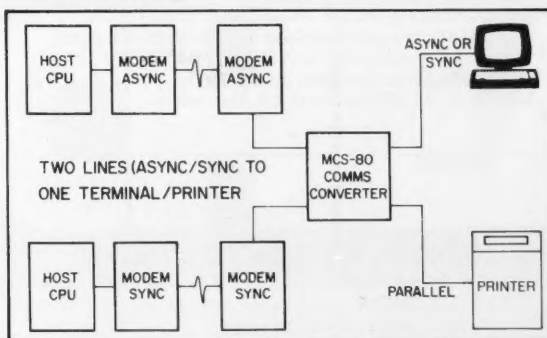


The MCS-80 multiport protocol converter enables intercommunication of data between multiple computers or terminals using different line discipline protocols. Protocol converters are fully self contained and allow complete transparency and connection of terminals to most popular IBM, Univac, Honeywell, Burroughs and NCR computers.

The MCS-40 interface is a micro processor based controller that is the heart of all IEI communications products. Thousands of these interface boards have been shipped and are operational in the field. All external connections are PC board mounted, thereby eliminating most cabling problems. The 8085 micro processor provides for extensive diagnostic capability and self test checking.



- *8085 Microprocessor, 10 mhz
- *16K EPROM
- *16K Static RAM
- *56 Program Switches
- *Self Contained Power Supply
- *Seven Segment LED Display for Diagnostic and System Status
- *Three Serial RS-232/CL Ports
- *Async/Sync
- *One Buffered Parallel Port for Keyboard, Tape, Printer, or LED's
- *Nationwide Service



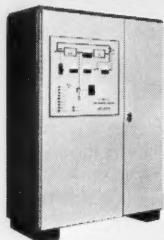
IEI INNOVATIVE ELECTRONICS INC.

15200 Northwest 60 Avenue; Miami Lakes, Florida 33014
(305) 558-1591 Telex:807121

ELGAR AC POWER SUPPLIES

an Onan® power systems company

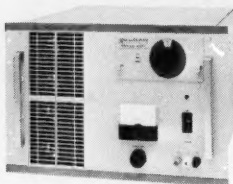
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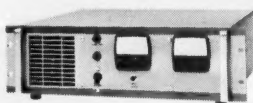
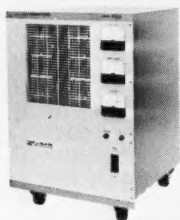
Elgar's UPS include rectifier / charger, battery, inverter, synchronizing and switching equipment to assure precise, uninterruptible power to critical loads. Typical performance includes 1% voltage regulation, 5% maximum total harmonic distortion.



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50/60Hz INPUT, 15Hz TO 10KHz OUTPUT, 120VA TO 27KVA.

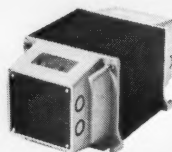
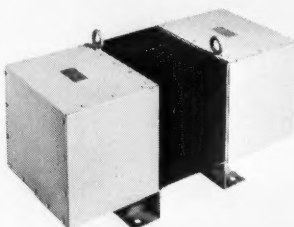
Elgar's AC Power Sources provide fixed, variable, or programmable output voltages and frequencies with the largest number of single-, two-, or three-phase models available. Typical specifications include 25 microseconds response time, 0.4% maximum distortion and 0.1% regulation.



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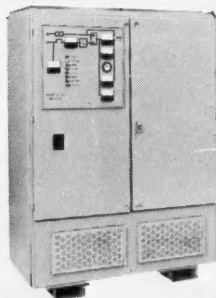
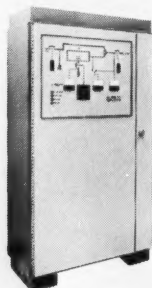
Elgar's AC Line Conditioners solve every power line problem except complete interruptions and are available in 1KVA, 3KVA and 5KVA single phase, 3, 9 and 15KVA three-phase models.



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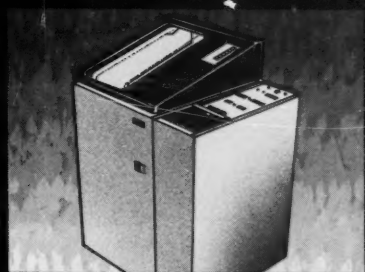


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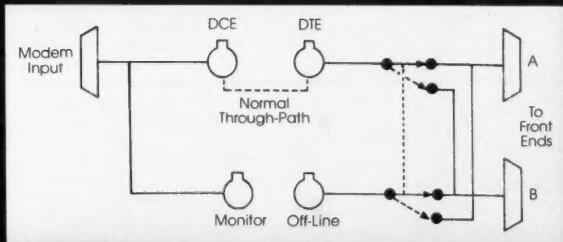
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TIME DIVISION MULTIPLEXER



Abbreviations and Acronyms

When technology moves faster than the language, as it usually does, a difficulty arises in the naming of new machines and processes. Manufacturers of new implements and devisers of new processes are forced to add layer upon layer of adjectives to specify the parameters of their wares. This creates problems of human memory and slows down the communications process until, sometimes in frustration and often with intent, the initial letters of the terms are substituted, in either pronounceable acronyms or unpronounceable abbreviations. It is easier to refer to a laser, rather than light amplification by stimulated emission of radiation, and the communications process has, in this case, regained the necessary speed.

The usual procedure among scientists and researchers who were classically trained was to use Greek for the mathematics and Latin for the names. Thus, radio was derived from a Latin word meaning ray. Radar, in turn, was made up from radio detecting and ranging. Multiplex is also drawn from a Latin word; it originally

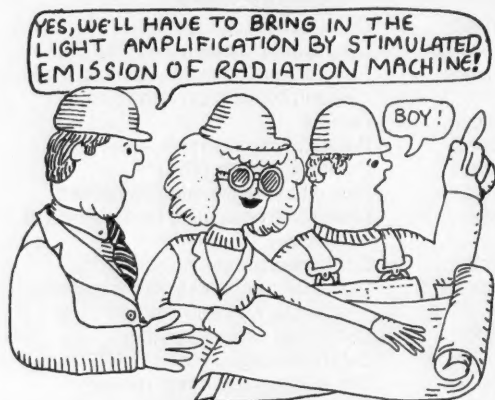
meant much or many, and was not first applied to the transmitting of many messages over one line, but to much or many of anything. At any rate, it remained for the data communications field to shorten the word to mux, using the age-old procedure of using X to stand for something. Thus we have X-mitter for transmitter and X-on and X-off for signing on and off. Sometimes, however, Greek is used for the names as well as the mathematical symbols.

Occasionally, this time-honored method of naming things produces a term that lasts and becomes the universal way of expressing the concept; so it was with radar, and now with modem.

Other machines and processes have not been so fortunate, however, and the acronyms and abbreviations, themselves, have become a thorny problem for the tyro or the outsider. With this in mind, DATA COMMUNICATIONS has compiled a list of more than 300 common and uncommon abbreviations, acronyms, and terms used in the field.

A/D	Analog/digital	CICS	Customer information control system
ACCT	Ad Hoc Committee for Competitive Telecommunications	CMOS	Complementary metal oxide semiconductor
ACF	Advanced communications function	CPH	Characters per hour
ACK	Acknowledgement, positive	CPODA	Contention priority-oriented demand assignment (protocol)
ACM	Association for Computing Machinery	CPU	Central processing unit
ACS	Advanced Communications Service (ATT)	Coax	Coaxial cable
ACU	Automatic calling unit	Cobol	Common business-oriented language
ADCCP	Advanced data communications control procedure	COM	Computer output microfilm
ADP	Automatic data processing	Comsat	Communications Satellite Corp.
AFIPS	American Federation of Information Processing Societies	CPOL	Communications procedure-oriented language
ALU	Arithmetic logic unit	CR	Carriage return
ANSI	American National Standards Institute	CRC	Cyclic redundancy checking
APL	A programming language	CRT	Cathode ray tube
Arinc	Aeronautical Radio Inc. (airlines network)	CTAK	Cipher text auto key
ARPA	Advanced Research Project Agency (Department of Defense)	CTS	Communications Technology Satellite or clear to send
Arpanet	ARPA network (Department of Defense)	DA	Data available
ARQ	Automatic request for repetition (IBM)	DAA	Data access arrangement (AT&T)
ASCII	American standard code for information interchange (7 level)	DAL	Data access line
ASR	Automatic send/receive (teleprinters)	DAP	Data access protocol
ATSU	Association of Time-Sharing Users	Darpa	Defense Advanced Research Project Agency (See ARPA)
Autodin	Automatic digital network (Department of Defense)	DASD	Direct access storage device
AVD	Alternate voice/data	Dataset	Synonym for modem (see modem)
Basic	Beginners all symbolic instruction code	Datel II	RCA Global Communications data service in conjunction with Telenet
Baudot	Teleprinter code (5 level)	dB, db	Decibel
BCC	Block check character	DBMS	Database management system
BCD	Binary coded decimal	DBS	Database service (WUI)
BDLC	Burroughs data link control	DCE	Data circuit-terminating equipment
BDN	Bell data network (planned)	DCF	Distributive computing facility (Bank of America)
BER	Bit error rate	DCS	Distributed computing system
BERT	bit-error-rate-test (set)	DDCMP	Digital Data communications message protocol (Digital Equipment Corp.)
Bit	Binary digit	DDP	Distributed data processing
Bit/s	Bits per second	DDS	Dataphone digital service (AT&T)
BLU	Basic link unit	Decnet	Digital Equipment Corp. network
BSC	Binary synchronous communications	DES	Data encryption standard
BTAM	Basic telecommunications access method (IBM)	DLC	Data link control
BTU	Basic transmission unit	DLCF	Data link control field
CATV	Community antenna television	DMA	Direct memory access
CAI	Computer assisted instruction	DMEP	Data-network modified emulator program (Cambridge Telecommunications Inc.)
CBEMA	Computer Business Equipment Manufacturers Association	DNA	Digital network architecture (Digital Equipment Corp.)
CBT	Computer-based terminal	DOS	Disk operating system
CBX	Computerized private branch exchange	DRS	Data rate selector
CCB	Common Carrier Bureau	DSC	Direct satellite communications
CCDN	Corporate consolidated data network (IBM)	DSDS	Dataphone switched digital service (AT&T)
CCF	Communications control field	DSE	Distributed system environment
CCIA	Computer and Communications Industry Association	DSU	Data service unit
CCIS	Common channel interoffice system (AT&T)	DTE	Data terminal equipment
CCITT	International Consultative Committee for Telegraphy and Telephony	DTS	Digital tandem switch
CCL	Communications control language	EBCDIC	Extended binary coded decimal interchange code (8 level)
CCT	Coupler cut through	ECOS	Extended communications operating system (Harris Corp.)
CCU	Communications control unit	EDP	Electronic data processing
CDCCP	Control Data communications control procedure (Control Data Corp.)	EFT	Electronic funds transfer
CDF	Communications-data field	EIA	Electronic Industries Association
CEPT	Conference of European Postal and Telecommunications Administrations	EIES	Electronic Information Exchange System (New Jersey Institute of Technology)

EOA	End of address
EOM	End of message
EOT	End of text or end of transmission
EPROM	Erasable programmable read only memory
ESS	Electronic switch system
FAX	Facsimile
FCC	Federal Communications Commission
FDX	Full-duplex transmission
FDM	Frequency-division multiplexer
FEC	Forward error correction
FED-STD	Federal standard
-1001	High-speed synchronous signaling rates between data terminal equipment and data circuit-terminating equipment
-1003	Bit-oriented data link control procedures
-1005	2.4 kbit/s modems
-1010	ASCII bit sequencing for serial-by-bit transmission
-1011	Character structure for serial-by-bit ASCII transmission
-1012	Character structure for parallel-by-bit ASCII transmission



-1013	Data terminal equipment to data circuit-terminating equipment synchronous signaling rates using 4 Hz circuits
-1020	Electrical characteristics of unbalanced voltage digital interface circuits
-1030	Electrical characteristics of balanced voltage digital interface circuits
FF	Form feed
FHD	Fixed-head disk
FIPS	Federal Information Processing Standards
FIGS	Figures shift (teleprinters)
FMTP	File management transaction processor (Bank of America)
FOC	Fiber optics communications
Fortran	Formula translation
Fox message	Test message (The quick brown fox jumps over the lazy dog's back)
FSK	Frequency-shift keying
FX	Foreign exchange
GPD	General purpose discipline (first IBM data link control)
HASP	Houston automatic spooling priority
HDLC	High-level data link control
HDX	Half-duplex transmission

HID/LoD	High-density/low-density tariff
Hz	Hertz (cycles per second)
IBM TSS	Timesharing system (IBM network)
ICA	International Communications Association
ICST	Institute for Computer Science and Technology
IDCMA	Independent Data Communications Manufacturers Association
IEEE	Institute of Electrical and Electronics Engineers
IFIPS	International Federation of Information Processing Societies
IMP	Interface message processor
IMS	Information management system (IBM)
Infonet	Computer Science Corp. network
Intelsat	International satellite service
I/O	Input/output
IPL	Initial program load
IPN	Instant private network
IRC	International record carrier
IS	International standard
IS-646-1973	Bit-coded character set for information processing interchange
IS 1155-1973	Information processing—use of longitudinal parity to detect errors in information messages (included in V.4 and X.4)
IS 1177-1973	Information processing—character structure for start/stop and synchronous transmission (included in V.4 and X.4)
IS 1745-1975	Information processing—basic mode control procedures for data communications systems
IS 2110-1972	Data communication—data terminal and data communication equipment—interchange circuits. Assignment of connector pin numbers (being revised—DIS 2110 is being balloted)
IS 2111-1972	Data communication—basic mode control procedures—code independent information transfer
IS 2593-1973	Connector pin allocations for use with high-speed data terminal equipment
IS 2628-1973	Basic mode control procedures—complements
IS 2629-1973	Basic mode control procedures—conversational information message transfer
IS 3309-1976	Data communications—high-level data link control procedures—frame structure
IS 4335-1977	Data communications—high-level data link control procedures—elements of procedures (independent numbering)
ISO	International Standards Organization
IT	Intelligent terminal
ITDM	Intelligent time-division multiplexer
ITS	Invitation to send
ITU	International Telecommunications Union
JCL	Job control language
KAK	Key-auto-key
KAU	Keystation adapter unit
KDS	Keyboard display station
KSR	Keyboard send/receive
LAP	Link access procedure
LED	Light-emitting diode

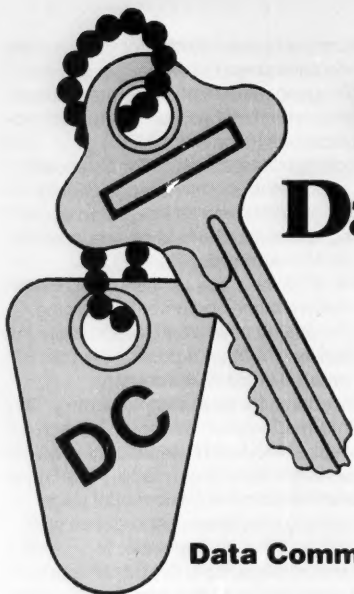
LF	Line feed	PSE	Packet-switching exchange
LDM	Limited-distance modem	PTT	Postal Telegraph and Telephone agencies (Europe)
LIU	Line interface unit	PUC	Public Utilities Commission
LIM	Line interface module	QAM	Quadrature amplitude modulation
LO	Line occupancy	QTAM	Queued telecommunications access method (IBM)
LRC	Longitudinal redundancy check	RAD	Random access device
LSD	Line-sharing device or line signal detector	RAM	Random access memory
LSI	Large-scale integrated (circuit)	RCAC	Remote computer access communications service
LTRS	Letters shift (teletypewriters)	RCD	Receiver-carrier detector
MD	Multiple dissemination	RDC	Remote data concentrator
MDS	Multiple dataset system	RLSD	Received line signal detector
Merit	Michigan network among three largest universities	RJE	Remote job entry
MHD	Moving-head disk	RMS	Root mean square
MHP	Message-handling processor (Bank of America)	RO	Receive only
MICR	Magnetic ink character recognition	ROM	Read only memory
MIU	Multistation interface unit	ROTR	Receive-only typing reperforation
MNCS	Multipoint network-control system	RPC	Registered protective circuit
Modem	modulator-demodulator	RPG	Report program generator
MOS	Metal oxide semiconductor	RPQ	Request for price quotation
MPCC	Multiprotocol communications controller	RS	Recommended standard (EIA)
MPL	Multischedule private line	RS-232-C	Interface between data terminal equipment and data communication equipment employing serial binary data interchange (August 1969)
MSI	Medium-scale integrated (circuit)	RS-269-B	Synchronous signaling rates for data transmission (January 1976; identical to ANSI X3.1-1976)
MT	Measured time	RS-334	Signal quality at interface between data processing terminal equipment and synchronous data communication equipment for serial data transmission (Also adopted as ANSI X3.24-1967; new revision being balloted)
MTBF	Mean time between failures	RS-357	Interface between facsimile terminal equipment and voice frequency data communication terminal equipment (June 1968)
MTS	Message telecommunications service (AT&T)	RS-363	Standard for specifying signal quality for transmitting and receiving data processing terminal equipment using serial data transmission at the interface with non-synchronous data communication equipment (May 1969)
MTTR	Mean time to repair	RS-366	Interface between data terminal equipment and automatic calling equipment for data communication (August 1969)
MUX	Multiplexer	RS-404	Standard for start/stop signal quality between data terminal equipment and non-synchronous data communication equipment (March 1973)
MVS	Multiple virtual storage	RS-410	Standard for electrical characteristics of Class A closure interchange circuits (April 1974)
NAK	Negative acknowledgement	RS-422	Electrical characteristics of balanced voltage digital interface circuits (April 1975)
NAM	Network access method (Control Data Corp.)	RS-423	Electrical characteristics of unbalanced voltage digital interface circuits (April 1975)
Naruc	National Association of Regulatory Utility Commissioners (state agencies)	RTS	Request to send
NBS	National Bureau of Standards	RU	Request/response unit
NC	Network connect	SBS	Satellite Business Systems (IBM, Aetna, Comsat)
NCP	Network control program (IBM)	SCC	Satellite communications controller or specialized common carrier
NCR-DNA	NCR Corp.-distributed network architecture		
NCS	National communications system (Department of Defense)		
NDT	Net data throughput		
NMC	Network management center		
NRZ	Non-return to zero (waveform)		
NSP	Network services protocol (Digital Equipment Corp.)		
NTPF	Number of terminals per failure		
NYPSC	New York Public Service Commission		
OCR	Optical character recognition		
Octopus	Control Data Corp. network		
OS	Operating system		
OSWS	Operating system workstation		
PABX	Private automatic branch exchange		
PAD	Packet assembler/disassembler		
PAM	Pulse amplitude modulation		
PBX	Private branch exchange		
PCM	Pulse-code modulation		
PFEF	Programmable front-end processor		
PIU	Path information unit		
PL/1	Programming language one (IBM)		
PMS	Public message service (WU)		
PMX	Packet multiplexer		
PROM	Programmable read only memory		
PRTM	Printing response-time monitor		
PSC	Public Service Commission		

SCPC	Single channel per carrier
SDLC	Synchronous data link control (IBM)
SID	Swift (see below) interface device
SIMP	Satellite information message protocol
SNA	Systems network architecture (IBM)
SNAP	Standard network access protocol
SNR	Signal/noise ratio
SOH	Start of header
SOM	Start of message
SP	Space character
Spool	Simultaneous peripheral operation on line (now an accepted term)
SQD	Signal quality detector
STR	Synchronous transmit/receive (4 level code, IBM)
STX	Start of text
SU	Signaling unit
SVD	Simultaneous voice/data
Swift	Society for Worldwide Interbank Financial Telecommunications (banking network)
Sysgen	System generation
TAC	Telenet access controller (Telenet Corp.)
TC	Terminal controller
TCAM	Telecommunications access method
TCU	Transmission control unit
TDM	Time-division multiplexer
TDMA	Time-division multiple access
Telex	Teletypewriter exchange service (WU)
TIMS	Transmission impairment measuring set (Hewlett-Packard)
TIP	Terminal interface processor
TMS	Telecommunications message switcher
TMU	Transmission message unit
TNS	Transaction network service (AT&T)
TSO	Timesharing option
TTL	Transistor-to-transistor logic
TTY	Teletypewriter
TUCC	Triangle University Computing Center
TWX	Teletypewriter exchange service (WU)
Tymnet	Timeshare Inc. network
UART	Universal asynchronous receiver/transmitter
USASCII	United States of America standard code for information interchange (identical to ASCII)
USITA	United States Independent Telephone Association



V.	CCITT code designation
V.1	Equivalence between notation symbols and the significant conditions of a two-condition code
V.2	Power levels for data transmission over telephone lines
V.3	International alphabet No. 5
V.4	General structure of signals of international alphabet No. 5 code for data transmission over public telephone network
V.10 (X.26)	Electrical characteristics for unbalanced double-current interchange circuits for general use with integrated circuit equipment in the field of data communications (and provisional amendments, May 1977)
V.11 (X.27)	Electrical characteristics for balanced double-current interchange circuits for general use with integrated circuit equipment in the field of data communications (and provisional amendments, May 1977)
V.15	Use of acoustic coupling for data transmission
V.19	Modems for parallel data transmission using telephone signaling frequencies
V.20	Parallel data transmission modems standardized for universal use in the general switched telephone network
V.21	200-bit/s modem standardized for use in the general switched telephone network
V.22	Standardization of data signaling rates for synchronous data transmission in the general switched telephone network
V.22bis	Standardization of data signaling rates for synchronous data transmission on leased telephone-type circuits
V.23	600/1.2K bit/s modem standardized for use in the general switched telephone network
V.24	List of definitions for interchange circuits between data terminal equipment and data circuit terminating equipment (and provisional amendments, May 1977)
V.25	Automatic calling and/or answering equipment on the general switched telephone network, including disabling of echo suppressors on manually established calls
V.26	2.4K/1.2K bit/s modem standardized for use on four-wire leased circuits
V.26bis	2.4K/1.2K bit/s modem standardized for use in the general switched telephone network
V.27	4.8 kbit/s modem standardized for use on leased circuits
V.27bis	4.8 kbit/s modem with automatic equalizer standardized for use on the leased circuits
V.27ter	4.8K/2.4K bit/s modem standardized for use in the general switched telephone network
V.28	Electrical characteristics for unbalanced double-current interchange circuits

V.29	9.6 kbit/s modem for use on leased circuits	X.26	Electrical characteristics for unbalanced double-current interchange circuits for general use with integrated circuit equipment in the field of data communications (identical to V.10)
V.31	Electrical characteristics for single-current interchange circuits controlled by contact closure	X.27	Electrical characteristics for balanced double-current interchange circuits for general use with integrated circuit equipment in the field of data communications (identical to V.11)
V.35	Data transmission at 48 kbit/s using 60-to-108 kHz group-bit/s circuits	V.28	DTE/DCE interface for start/stop mode data terminal equipment accessing the packet assembly/disassembly facility (PAD) on a public network situated in the same country
V.36	Modems for synchronous data transmission using 60-to-108 kHz group-bit/s circuits	X.29	Procedures for exchange of control information and user data between a packet-mode DTE and a packet assembly/disassembly facility (PAD)
V.41	Code independent control system	X.30	Standardization of basic model page-printing machine in accordance with international alphabet No. 5
V.54	Loop test devices for modems (and provisional amendments, May 1977)	X.31	Characteristics, from the transmission point of view, at the interchange point between data terminal equipment and data circuit-terminating equipment in a 200 bit/s start/stop data terminal
VAC	Value added carrier	X.32	Answer-back units for 200 bit/s start/stop machines in accordance with international alphabet No. 5
VAN	Value added network	X.33	Standardization of an international text for the measurement of the margin of start/stop machines in accordance with international alphabet No. 5
VIP	Visual information projection	X.92	Hypothetical reference connections for public synchronous data networks
VM	Virtual memory	X.95	Network parameters in public data networks
V+TU	Voice plus teleprinter unit	X.96	Call progress signals in public data networks
VS	Virtual storage	X3.1-1976	Synchronous signaling rates for data transmission
VSPC	Visual storage personal computing (IBM)	X3.15-1976	Bit sequencing of the American national standard code for information interchange in serial-by-bit transmission
VTAM	Virtual telecommunications access method (IBM)	X3.16-1976	Character structure and character parity sense for serial-by-bit data communication in the American national standard code for information interchange
WATS	Wide area telecommunications service (AT&T)	X3.25-1976	Character structure and character parity sense for parallel-by-bit communication in the American national standard code for information interchange
WPM	Words per minute	X3.28-1976	Procedures for the use of communication control characters of American national standard code for information interchange in specified data communications links
WRU	Who-are-you? character	X3.36-1977	Synchronous high-speed data signaling rates between data terminal equipment and data communication equipment
WUI	Western Union International	X3.44-1977	Determination of the performance of data communication systems
X-off	Transmitter off	X3.57-1977	Message heading formats for information interchange using ASCII for data communication system control
X-on	Transmitter on	XTC	External transmit clock ■
XTEN	Xerox Telecommunications Network		
X.	CCITT recommendation designation		
X.1	International user classes of service in public data networks		
X.2	International user facilities in public data networks		
X.3	Packet assembly/disassembly facility (PAD) in a public data network		
X.4	General structure of signals of international alphabet No. 5 code for data transmission over public data networks		
X.20	Interface between data terminal equipment and data circuit-terminating equipment for start/stop transmission services on public data networks		
X.20bis (V.21)	Compatible interface between data terminal equipment and data circuit-terminating equipment for start/stop transmission services on public data networks		
X.21	General purpose interface between data terminal equipment and data circuit-terminating equipment for synchronous operation on public data networks		
X.21bis	Use on public data networks of data terminal equipment which is designed for interfacing to synchronous V-series modems		
X.24	List of definitions of interchange circuits between data terminal equipment and data circuit-terminating equipment on public data networks		
X.25	Interface between data terminal equipment and data circuit-terminating equipment for terminals operating in the packet mode on public data networks (and provisional amendment, April 1977)		



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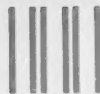
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AMERICAN TERMINAL LEASING CO

Box 68 Kenmore Sta
Boston, MA 02215
617-261-2700
Contact: William S Grinker
■ Products & Services
Batch terminals
Intelligent (programmable) terminals
Teleprinters, impact
Teletypewriters
Video data terminals (KSR)
Lease and resale organizations

AMERICAN USED COMPUTER CO

712 Beacon St
Boston, MA 02215
617-261-1100
■ Products & Services
Concentrators
Message switchers
Minicomputers
Multiplexers, frequency division
Multiplexers, time division
Multiplexers, intelligent
Multiplexers, group band
Remote network processors
Acoustic couplers
Digital service units
Modems, limited distance
Modems, voice-grade, low-speed
Add-on main memory
Cartridges
Cartridge drives
Cassettes
Cassette drives
Disc drives, floppy
Disc drives, large
Tape, magnetic
Tape drives, magnetic
Tape, paper
Tape punch/reader, paper
Badge readers
Bar code readers
Batch terminals
Graphic display terminals
Intelligent (programmable) terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)

Video data terminals (RO)
Automatic answering units
Automatic calling units
Cables, electrical prefabricated extender
Data access arrangement devices
Switches, data communications, automatic
Switches, data communications, manual
Lease and resale organizations

AMES MEDICAL RECORD SYSTEMS DIV

30 Park St
Somerville, MA 02143
617-776-1142
Contact: Jack B Goldman
■ Products & Services
Bar code readers

Branch Sales Offices:

CA Lafayette
Access Systems
415-283-0286

CA Long Beach
Access Systems
213-424-1601

DC Washington
Access Systems
202-223-0839

GA Atlanta
Access Systems
404-256-0344

IL Chicago
Access Systems
312-279-9474

MI Detroit
Access Systems
313-227-4095

MS Jackson
Access Systems
601-825-8340

MO St Louis
Access Systems
314-521-8322

NY Yonkers
Access Systems
914-423-2300

OH Cleveland
Access Systems
216-696-7060

PA Philadelphia
Access Systems
215-293-1510

PA Pittsburgh
Access Systems
412-687-6161

TX Dallas
Access Systems
214-387-4828

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201.**

AM JACQUARD SYSTEMS

1639 11th St
Santa Monica, CA 90404
213-450-1242

Contact: Moira Ewings

■ Products & Services

Front-end processors

Minicomputers

DDP systems

Cartridges

Cartridge drives

Disc drives, floppy

Discs, floppy

Disc drives, large

Tape drives, magnetic

Batch terminals

Intelligent (programmable) terminals

Remote job entry terminals
Teleprinters, impact
Video data terminals (KSR)
Word processors, communicating
Computer/communications interfaces
Furniture, cabinets, terminal enclosures
Lease and resale organizations
Maintenance organizations

AMPEX CORP

401 Broadway
Redwood City, CA 94063
415-367-2011

Contact: J A Fisher

■ Products & Services

Add-on main memory

Cassettes

Discs, floppy

Disc drives, large

Tape drives, magnetic

Branch Sales Offices:

CA Glendale

Ampex

500 Rodier Dr

213-240-5000

GA Atlanta

Ampex Corp

3135 Chestnut

404-451-7112

IL Elk Grove Village

Ampex

2201 Lunt Ave

312-593-6000

MD Bethesda

Ampex

10215 Fernwood Rd

301-530-8800

NJ Hackensack

Ampex

75 Commerce Way

201-489-7400

TX Dallas

Ampex

1615 Prudential Dr

214-637-5100

ONTARIO, CANADA

Ontario

Ampex Canada Inc.

132 East Dr

416-791-3100

ARGENTINA

Buenos Aires

Electronics Ampex SACI

Casilla de Correo 5403

49-4159

AUSTRALIA

New South Wales

Ampex Australia Pty Ltd

4 Carlotta St; Artarmon

439-4077

BELGIUM

Nivelles

Ampex SA

Rue de L'Industrie; B-1400

224921

BRAZIL

Rio de Janeiro

Ampex do Brasil Eletronica LTDA

Rua Mexico, 31

242-3795

COLOMBIA

Bogota

Ampex de Colombia SA

Apartado Aereo 29613

285-0517

ENGLAND

Reading

Ampex Great Britain Ltd

Acre Rd RG2 0QR

0734-85200

FRANCE

Boulogne

Ampex SARL

21 Rue du Dome

609-91-55

GERMANY, WEST

Frankfurt-Main

Ampex Europa GmbH

Walter Kolb Strasse

60581

GREECE

Athens

Ampex World Operations SA

Kifissias Avenue 32

6830611

HONG KONG

Kowloon

Ampex World Operations SA

3 Salisbury Road

3-678051-3

ITALY

Rome

Ampex Italiana SpA

Via Riccardo Gigante 4

546991

JAPAN

Chiyoda-Ku

Ampex Japan Ltd

New Belle Mode Bldg; 3 Kojimachi

3 Choma,

264-7331

MEXICO

Division del Norte

Ampex de Mexico SA de CV

Aptdo Postal 13-615

539-6870

NETHERLANDS

Utrecht

Ampex BV

Zamenhofdreef 65A

612921

SWEDEN

Sundbyberg

Ampex AB

Box 7056

08-282910

AMPEX CORP

MEMORY PRODUCTS DIV

200 N Nash St

El Segundo, CA 90245

213-640-0150

Contact: Clyde Cornwell

■ Products & Services

Add-on main memory

Cartridge drives

Disc drives, large

Tape drives, magnetic

Branch Sales Offices:

CA Santa Ana

Ampex

1570 E 17

714-973-2970

FL Coral Springs

Ampex

8316 NW 20 St

305-753-7158

IL Elk Grove Village

Ampex

2201 Lunt Ave

312-593-6000

MD Bethesda

Ampex

10215 Fernwood

301-530-8800

MA Waltham

Ampex

391 Totten Pond Rd

617-890-2040

NJ Hackensack
Ampex
75 Commerce Way
201-489-7400

PA Collegeville
Ampex
381 Stratford
215-489-6494

PA Plumboro
Ampex
641 Pikeview Dr
412-371-6050

TX Houston
Ampex
6430 Hillcroft
713-774-8714

TX Dallas
Ampex
1615 Prudential Dr
214-637-5100

ANADEx INC
9825 DeSoto Ave
Chatsworth, CA 91311
Contact: K A Matthews
■ Products & Services
Remote line printers
Teleprinters, impact

ANDERSON JACOBSON
521 Charcot Ave
San Jose, CA 95131
408-263-8520
Advertising page 140
Contact: Jerry Schoenwald
■ Products & Services
Acoustic couplers
Modems, voice-grade, low-speed
Disc drives, floppy
Disks, floppy
Floppy disc recorders
Teleprinters, impact
Teleprinters, non-impact
Video data terminals (KSR)
Automatic answering units
Paper for terminals
Ribbons and supplies for terminals and
printers

Branch Sales Offices:

CA Sunnyvale
Anderson Jacobson
1089 Morse Ave
408-744-1785

CA Carson
Anderson Jacobson
221 Selandia La
213-538-4170

CO Arvada
Claredon Co
8141 W 1-70 Frontage Rd
303-424-2010

CT E Hartford
Anderson Jacobson Inc
135 Burnside Ave
203-289-9591

GA Atlanta
Anderson Jacobson
3236 Shallowford Rd
404-451-2744

IL Rosemont
Anderson Jacobson
5515 Milton Pkwy
312-671-7155

KS Shawnee Mission
Anderson Jacobson
10000 West 75 St
913-384-6549

MD Rockville
Anderson Jacobson
1132 Taft St
301-424-1767

MA Burlington
Anderson Jacobson
213 Middlesex Tnpk
617-273-1420

MI Oak Park
Anderson Jacobson
14630 W Eight Mile Rd
313-967-1414

MN Minneapolis
Anderson Jacobson
807 13 Ave S
312-671-7155

MO Affton
Anderson Jacobson
9903 Gravois Rd Rear
314-869-8444

NJ Hackensack
Anderson Jacobson
80 Frederick St
201-488-2525

NY Syracuse
Anderson Jacobson
Pickard Bldg Annex; 104 Pickard
Dr-Rm 4
315-454-9219

NY New York
Anderson Jacobson
1 Pennsylvania Plaza; Suite 2430
212-594-9630

OH Cincinnati
Anderson Jacobson
10810 Millington Ct
513-793-6900

OH Cleveland
Anderson Jacobson
17012 Madison Ave
216-228-3387

PA Pittsburgh
Anderson Jacobson
610 Weyman Rd
412-881-8989

PA Norristown
Anderson Jacobson
720 E Johnson Hwy
215-277-7074

TX Dallas
Anderson Jacobson
2860 Walnut Hill La
214-357-0248

TX Houston
Anderson Jacobson
6300 Hillcroft
713-771-1342

WA Seattle
Datac Inc
605 Strander Blvd
206-242-8883

ONTARIO, CANADA
Ottawa
Anderson Jacobson
50 Colonnade Rd
613-226-2551

ENGLAND
Shepperton, Middlesex;
Walton-on-Thames
Anderson Jacobson Ltd
The Estate Office; Station
Approach

FRANCE
Paris
Anderson Jacobson, S A
14 rue Leon Gambetta; 92120
Montrouge
654-1000

ANN ARBOR TERMINALS
6175 Jackson Rd
Ann Arbor, MI 48103
313-663-8000
Contact: Sarah Freeman

■ Products & Services
Batch terminals
Graphic display terminals
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

AL Huntsville
FM Assoc
Box 1368
205-536-9990

CA Canoga Park
Chandler Assoc
7032 Owensmouth Ave
213-340-6103

CA Los Altos
Chandler Assoc
One First St
415-941-1887

CT Litchfield
Digital Sales Assoc
West St
203-567-9776

FL Orlando
FM Assoc
Box 13705
305-851-5710

FL Jupiter
FM Assoc
Box 996
305-746-2996

GA Atlanta
FM Assoc
Box 9901
404-634-7830

MD Rockville
Electronic Marketing Assoc
11716 Parklawn Dr
301-774-7700

MA Waltham
Digital Sales Assoc
9 Spring St
617-899-4300

MO Grandview
Digital Sys Sls
4006 East 137th Ter
816-765-3337

NC Ramseur
FM Assoc
Box 156
919-824-2196

PA King of Prussia
Electronic Marketing Assoc
210 Goddard Blvd
215-265-1600

TX Dallas
Remtek Inc
13500 Midway Rd
214-387-2855

WA Bellevue
Hood Eng
12835 Bellevue-Redmond
206-453-9375

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tory, page 5** to find out who
makes it.

THE ANSUL CO/WORMALD INTL GRP
1 Stanton St
Marinette, WI 54143
715-735-7411
Contact: Terry Mylenar
■ Products & Services
Fire Detection/Protection Equipment

APPLICATIONS SOFTWARE

21515 Hawthorne Blvd
Torrance, CA 90503
213-540-0111
Contact: Attn: VP Mktg
■ Products & Services
Data com. softw, independ. softw houses

Branch Sales Offices:

IL Oak Brook
Applications Software Inc
2625 Butterfield Rd
312-325-7390

NJ Paramus
Applications Software Inc
E-28 Farview Tr
201-871-1111

APPLIED DATA COMMUNICATIONS

14272 Chambers Rd
Tustin, CA 92680
714-731-9000
Advertising page 74
Contact: Patrick Kane
■ Products & Services
Protocol analyzers
Disc drives, floppy
Computer/communications interfaces
Data com. softw, distr. dp systems vend.
Data com. softw, intel. term. vendors

APPLIED DELTA SYSTEMS INC

101 Kor Center E
Bellmawr, NJ 08031
609-931-3100
Contact: Ken Felix
■ Products & Services
Modem sharing units
Multiplexers, time division
Multiplexers, intelligent
Port selectors
Port sharing units
Acoustic couplers
Line drivers
Modems, voice-grade, high-speed
MIL 188C adapters
Network management centers
Tech control centers
Automatic answering units
Automatic calling units
Modem eliminators
Select. & transfer equip., monitor & test
switch. equip.
Select. & transfer equip., patch. equip.
Select. & transfer equip., reconfig. equip.
Switches, data communications, automatic
Switches, data communications, manual
Voice adapters

Branch Sales Offices:

PA Pittsburgh
Applied Delta Systems
16 E West Dr
412-931-1960

APPLIED DIGITAL DATA SYSTEMS INC

100 Marcus Blvd
Hauppauge, NY 11787
516-231-5400
Contact: Marion B Pakula
■ Products & Services
Minicomputers
DDP systems
Batch terminals
Intelligent (programmable) terminals
Interactive systems
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

AL Birmingham
Applied Digital Data Systems Inc
400 Century Park S
205-979-2030

AZ Phoenix
Applied Digital Data Systems Inc
4621 N 16 St
602-265-3264

CA Newport Beach
Applied Digital Data Systems Inc
4030 Birch St
714-752-6700

CA Palo Alto
Applied Digital Data Systems Inc
2275 East Bayshore Rd
415-328-0560

CA San Diego
Applied Digital Data Systems Inc
3443 Camino Del Rio S
714-280-9341

CO Denver
Applied Digital Data Systems Inc
3333 Quebec Bldg B
303-756-3663

FL Hollywood
Applied Digital Data Systems Inc
2741 N 29 Ave
305-920-2337

GA Atlanta
Applied Digital Data Systems Inc
4380 Georgetown Sq
404-455-9341

IL Schaumburg
Applied Digital Data Systems Inc
1325 Remington Rd
312-843-7555

LA New Orleans
Applied Digital Data Systems Inc
1440 Canal St
504-566-1372

MA Chestnut Hill
Applied Digital Data Systems Inc
850 Boylston St
617-739-4857

MI Southfield
Applied Digital Data Systems Inc
29350 Southfield Rd
313-569-7890

MN Minneapolis
Applied Digital Data Systems Inc
4640 W 77th St
612-835-7066

MO Independence
Applied Digital Data Systems Inc
9710 E 40 Hwy
816-353-8080

NJ Pennsauken
Applied Digital Data Systems Inc
Rm 608W, Cooper Pkwy Off Bldg;
No Park & Airtt Hwy
609-663-4040

NY Hauppauge
Applied Digital Data Systems Inc
100 Marcus Blvd
516-231-5400

NY NYC
Applied Digital Data Systems Inc
1 Penn Plaza
212-736-2830

OH Cleveland
Applied Digital Data Systems Inc
16600 Sprague Rd
216-826-4540

OK Tulsa
Applied Digital Data Systems Inc
9726 E 42 St
918-664-2337

TX Houston
Applied Digital Data Systems Inc
5151 Mitchell Dale
713-680-2332

TX Dallas
Applied Digital Data Systems Inc
13610 Midway Rd
214-387-2337

UT Draper
Applied Digital Data Systems Inc
12953 S State St
801-57-9400

VA McLean
Applied Digital Data Systems Inc
7921 Jones Branch Dr
703-734-9445

WA Kent
Applied Digital Data Systems Inc
19613 81 Ave S
206-852-8611

WI Elm Grove
Applied Digital Data Systems Inc
890 Elm Grove Rd
414-784-7407

ENGLAND

London
Applied Digital Data Systems Inc
4 Tavistock Place
01-837-2281

APPLIED SYSTEMS CORP

26401 Harper Ave
St Claire Shores, MI 48081
313-779-8700
Contact: Attn: VP Mktg
■ Products & Services
Concentrators
Front-end processors
Message switchers
Minicomputers
Multiplexers, intelligent
Remote network processors
DDP systems
Add-on main memory
Cartridge drives
Disc drives, floppy
Tape drives, magnetic
Batch terminals
Data entry terminals, portable
Graphic display terminals
Intelligent (programmable) terminals
Remote line printers
Teleprinters, impact
Teletypewriters
Terminal controllers
Video data terminals (KSR)
Code converters
Computer/communications interfaces
Data compactor
Data security devices, encoder/decoders
Data communications consultants
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.

Branch Sales Offices:

CA Encino
King Engr Co
17333 Rancho St
213-981-8677

OH Cleveland
CSA Sales Co
20278 Westhaven
216-333-2088

ARBOR COMMUNICATIONS CORP

3784 Fabian Way
Palo Alto, CA 94303
415-494-9032
Contact: Marcus Wood
■ Products & Services
Concentrators
Front-end processors

Data content monitors
EIA cable testers
Protocol analyzers
Data communications consultants
Lease and resale organizations
Used equipment

Branch Sales Offices:

- CA Los Angeles
Ezra Mintz Assoc
8929 S Sepulveda Blvd
213-670-5410
- CA San Diego
Ezra Mintz Assoc
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714-565-4921
- MD Rockville
MESA
11900 Parklawn Dr
301-881-8430
- MA Needham
Eastmark
10 Kearney Rd
617-449-0050
- MI Brighton
Lowry & Assoc
135 W North St
313-227-7067
- NJ Cherry Hill
Datronix
Ellisburg Plaza
609-795-1141
- NY Great Neck
MTI
159 Northern Blvd
212-895-7177
- OH Dayton
Lowry & Assoc
1524 Marsetta Dr
513-429-9040
- OH Cleveland
Lowry & Assoc
24200 Chagrin Blvd
216-464-8113
- OH Columbus
Lowry & Assoc
1050 Freeway Dr N
614-436-2051
- PA Pittsburg
Lowry & Assoc
Seven Parkway Ctr
412-922-5110
- TX Richardson
DBM Assoc
406 Highbrook
214-690-4642

ARK ELECTRONIC PRODUCTS

325 W Hibiscus Blvd
Melbourne, FL 32901
305-724-5260
Advertising page 50
Contact: Merv Wilson
■ Products & Services
Multiplexers, frequency division
Port selectors
Modems, limited distance
Computer/communications interfaces
Modem eliminators
Protocol converters

ASPEN RIBBONS

1700 N 55th St
Boulder, CO 80301
800-525-0646
Contact: Peter Williams
■ Products & Services
Cartridges
Cassettes
Discs, floppy
Disc packs

Tape, magnetic
Ribbons and supplies for terminals and
printers

ASSOCIATED COMPUTER
CONSULTANTS

228 E Cota St
Santa Barbara, CA 93101
805-963-8801
Contact: Roland F Bryan
■ Products & Services
Front-end processors
Minicomputers
Packet processors
Remote network processors
Protocol converters
Data communications consultants
Data com. softw, comms processor vend.

Branch Sales Offices:

- MD Columbia
Ron Stoughton
Teachers Building
301-997-9373

ASTROCOM CORP

120 W Plato Blvd
St Paul, MN 55107
612-227-8651
Advertising page 52
Contact: Thomas H Frahm
■ Products & Services
Acoustic couplers
Line drivers
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
Electrical-parameters test equipment
Error rate detectors
Automatic calling units
Data access arrangement devices
Modem eliminators

Branch Sales Offices:

- CA Saan Diago
Western Scientific
5402 Ruffin Rd
714-565-6699
- CA Cupertino
Western Micro Systems
10040 Bubb Rd
408-725-1660
- FL Orlando
Technical Assoc
Box 20693
305-894-7531
- HI Honolulu
Aloha Assoc
1919 Hunnewell St
808-941-1574
- IL Chicago
Scientific Sales Co
7527 W Touhy Ave
312-775-7594
- MD Gaithersburg
Wright Mktg Co
19104 Rhodes Way
301-840-1928
- MA Wellesley Hills
R H Sturdy Co
167 Worcester St
617-235-2330
- MO St Louis
Inland Assoc
13100 Manchester Rd
314-821-3742
- NJ Fort Lee
Hansen & Hughes Co
2175 Lemoine Ave
201-944-1600
- OH Rising Sun
Mecom
7033 Sandusky Rd
419-457-3231

OR Portland
Centauri Corp
516 SE Morrison
503-238-1320

PA King of Prussia
J E Cuesta & Co
Dekalb Pk
215-265-5800

TX Houston
Data Aids Assoc
1440 North Loop
713-862-6685

ONTARIO, CANADA

Ottawa
Louis Albert Assoc Inc
2264 Stevenage Dr
613-737-5941

AUSTRALIA

Crows Nest NSW
Datamatic
90 Alexander St
43-3333

ENGLAND

Princes Risborough; Bucks
Data & Control Equipment LTD
Poppy Rd
08-444-3281

GERMANY, WEST

Feldbergstrabe
Telemation GMBH & Co
6 Frankfurt/Main 1
06-11-723418

ATLANTIC RESEARCH CORP

5390 Cherokee Ave
Alexandria, VA 22314
703-354-3400
Contact: A T Nagy
■ Products & Services
Data content monitors
EIA cable testers
Electrical-parameters test equipment
Error rate detectors
Protocol analyzers
Response-time monitors
RTS emulator
Network management centers
Tech control centers
Telecommunications monitor
Select. & transfer equip., monitor & test
switch, equip.
Select. & transfer equip., patch, equip.
Select. & transfer equip., reconfig. equip.
Switches, data communications, automatic
Switches, data communications, manual

Branch Sales Offices:

- CA Hollywood
O'Halloran Assoc
10700 Ventura Blvd
213-877-0173
- CA Palo Alto
O'Halloran Assoc
1020 Corporation Way
415-326-1493
- IL Arlington Hgts
Reshal Assoc Inc
219 W Univ Dr
312-398-7660
- MD Edgewater
Commart Inc
3910 W Shore Dr
301-261-4344
- MI Brighton
Reshal Assoc Inc
314 S 3 St
313-227-1043
- MIN Eden Prairie
Reshal Assoc
10521 Lake Fall Dr
612-941-8697

MO Independence
Eng Services Co
2425 S Cryslar
816-254-3600

MO St Louis
Eng Services Co
8420 Delmar Blvd
314-997-1515

NJ Ridgewood
Instrumentation Sales Co
171 E Ridgewood Ave
201-445-5210

NY Selkirk
RG Eng
6 Sherbrook Dr
518-439-2830

NY Rochester
RG Eng
3100 Monroe Ave
716-385-3021

OH Aurora
Reshal Assoc Inc
1240 Pioneer Trail
216-562-9872

OH Cincinnati
Data Processing Corp
2327 Park Ave
216-886-2090

TX Richardson
Southwest Datacom
1211 Executive Dr E
214-234-3050

WA Bellevue
Data Power Sales Co
Box 3012
206-453-8200

ONTARIO, CANADA
Ottawa
Louis Albert Assoc Inc
2264 Stevenage Dr; P O Box 8526
613-737-5941

BELGIUM
Brussels
Simac Elect
Triomflaan 148

ENGLAND
Wargrave Berkshire
Interlekt Rathbart Ltd
72-74 High St
Wargrave 073-522-4678

FRANCE
Sevres
Tekelec Airtronic
Cite des Bruyeres; Rue Carle
Vernet

GERMANY, WEST
Feldbergstrasse
Telemation GmbH
6000 Frankfurt/Main 1

ISRAEL
Tel-Aviv
R D T Elect Eng
Box 21082

JAPAN
Tokyo
Japan Direx Corp
Getz Bldg; 3-18-12 Roppongi
Minato-Ku

MEXICO
Mexico
Provedora Electronics;
Industrial S A
Dr Rio de la Loza; No. 237 ler
Piso

NETHERLANDS
Veldhoven
Simac Elect
Veenstraat 20

NEW ZEALAND
Te Aro, Wellington
CBL Holdings Ltd
Datacommunications Group; Box
6646

SINGAPORE
Singapore
NECOM Private Ltd
Maxwell House; Maxwell Rd

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Payma S L
Enrique Larreta 9

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Villagstan 1 S-190 30

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AUSTRON INC
1915 Kramer Lane
Austin, TX 78758
512-836-3523
Contact: Robert Ellis
■ Products & Services
Computer/communications interfaces

Branch Sales Offices:
VA McLean
Austron Navigation Inc
1800 Old Meadow Rd
703-734-1990

AUTOCALL DIV/FEDERAL SIGNAL
CORP
41 E Tucker Ave
Shelby, OH 44875
419-347-2400
Contact: Ken Schmunk
■ Products & Services
Fire Detection/Protection Equipment

AUTOMATIC CONTROL SYSTEMS
8515 Freeway Dr
Macedonia, OH 44056
216-467-2186
Contact: Attn: VP Mktg
■ Products & Services
Microwave/Laser Systems, Private

AVANTEK
3175 Bowers Ave
Santa Clara, CA 95051
408-249-0700
Contact: Attn: Dir of Mktg
■ Products & Services
Microwave/Laser Systems, Private

Branch Sales Offices:

CA Santa Clara
Avantek
3175 Bowers Ave
408-249-0700

CO Denver
Avantek
Box 27498
303-989-0722

KS Shawnee
Avantek
Box 3116
913-631-8013

OH N Olmsted
Avantek
3181 W 230 St
216-779-0199

AVANTI COMMUNICATIONS CORP
Aquidneck Ind Pk
Newport, RI 02840
401-849-4660
Contact: J Conrad MacQuarrie
■ Products & Services
Modem sharing units
Line drivers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Modems, wideband, half-group band
Modems, wideband, group band
Modems, wideband, super-group band
Cables, electrical prefabricated extender
Computer/communications interfaces
Modem eliminators
Protocol converters
Switches, data communications, automatic
Data communications consultants

Branch Sales Offices:

AK Anchorage
Trans Alaska Data Sys
Box 1211
907-344-1141

CA Anaheim
Moxon Elctns
1440 S State College
714-635-7600

FL Orlando
Col-Ins-Co
Box 13189
305-423-7615

IL Rolling Meadows
Sea Inc
1225 Carnegie St
312-255-4820

IN Carmel
SEA Inc
624-B S Rangeline Rd
317-846-2591

MD Greenbelt
Riffe & Assoc
8951 Edmonston Rd
301-474-8600

MA Framingham
Data Comm Assoc
1 Birchmeadow Cir
617-877-2984

MI Troy
Teleproducts
2921 Townhill
313-642-6120

MI Milford
Milford Scientific
203 Union St
313-685-8912

MN Minneapolis
Sea Inc
7601 N Kentucky Ave
612-425-4455

MO Grandview
Digital Systems Sales Inc
4006 E 137 Terr
816-765-3337

NJ Ridgewood
Instrumentation Sales Co
Box 403
201-445-5210

NM Las Cruces
BFA Corp
Box 1237
505-523-0601

NY DeWitt
D B Assoc
3307 Erie Blvd E
315-446-0220

NC Winston-Salem
Col-Ins-Co Inc
Box 11607
305-423-7615

OH Dayton
Ashby Assoc Inc
4130 Linden Ave
513-252-5627

PA Ambler
Denco Data Equipment Co
25 Skippack Pike
215-542-9876

TX Richardson
Barry Sales
709 Lingco
214-234-0255

WA Seattle
Hayes Technical
8500 Perimeter Rd S
206-763-2210

WI Waukesha
Sea Inc
2423 Pebble Valley Rd
414-547-6637

AXIOM CORP
5932 San Fernando Rd
Glendale, CA 91202
213-245-9244
Contact: Simon Harrison

Branch Sales Offices:

AL Huntsville
Scientific Devices
904 Bob Wallace Ave SE
205-536-1969

CA Sunnyvale
Electronic Marketing Specialists
599 N Mathilda Ave
408-245-9291

CA Sherman Oaks
Electronic Marketing Specialists
13837 Ventura Blvd
213-990-4244

CA Tustin
Electronic Marketing Specialists
2600 Walnut Ave
714-832-9920

CO Littleton
Eissler Sales & Service
7132 S Davies St
303-794-1779

CT Stamford
NPM Assoc Inc
64 Pinnacle Rock
203-329-0022

FL Orlando
Scientific Devices
806-26 St
305-841-8180

FL Shalimar
Scientific Devices
21 Birch Ave
904-651-4407

IL Des Plaines
Lincoln Hodges & Assoc
3158 Des Plaines Ave
312-297-3810

MD Gaithersburg
General Scientific Corp
Box 2145
301-840-9545

MO Independence
ESC Sales & Leasing Co
2425 S Chrysler
816-254-3600

MO St Louis
ESC Sales & Leasing Co
8420 Delmar Blvd
314-997-1515

NC Winston-Salem
Scientific Devices
Box 11136
919-765-5766

TX Dallas
J Clay Co
2619 Electronic Ln
214-350-1281

TX Alief
J Clay Co
Box 656
713-777-4131

WA Bellevue
Hood Eng
12835 Bellevue-Redmond Rd
206-453-9375

WI Waukesha
Lincoln Hodges & Assoc
217 Wisconsin Ave
414-542-3087

BRITISH COLUMBIA, CANADA
Vancouver BC
Pacific Computer Store
4509-11 Rupert St
604-438-3282

AUSTRALIA
Auburn NSW 2144
Warburton Franki Pty Ltd
199 Parramatta Rd
011-61-2-678-1711

BELGIUM
Brussels 1150
Intercontinental Services Inc
Avenue Chant d'Oiseau
106; Vogelzanglaan
011-32-2-647-9845

ENGLAND
Thame Oxon
Memec Ltd
Thame Park Ind Estates
011-4-84-421-3146

FRANCE
F-92220 Bagneux
Auctel
143 Rue des Meuniers
011-33-41-664-10-50

GERMANY, WEST
8000 Munich
Wetronic Automation
Claude Lorraine Strasse 29
011-49-89-652-096

INDIA
Madras
Promac
37 McNichols Rd
662190

ISRAEL
Tel-Aviv
Milchan Bros Ltd
29 Karlebach St
011-3-285282

JAPAN
Yokohama
Nippon Hamlin
88 Komaoka-Cho

NETHERLANDS
Hertogenbosch
Compudata
Rietveldenweg 49
011-31-73-215700

NORWAY
N-Oslo
ITT Instrument
Postboks 130; Kaldbakken
011-47-2-162-610

SINGAPORE
Singapore
Tan Accounting
Kim Tian Rd
011-65-2-700411

SOUTH AFRICA
Cape Town
Eagle Electronics
31-41 Hout St
011-27-21-45-1421

SPAIN
Madrid
Unitronics SA
Torre de Madrid; Pl 12
011-34-1-242-5204

SWEDEN
Vaxholm
Saven AB
Strandgatan 3; S-185 000
011-46-764-315-80

SWITZERLAND
Mutschellen
Stolz AG
Bellikonstrasse 218
011-41-57-54655

TAIWAN
Taipei
Syscom Computer Eng Co
283 Fu-Hsin S Rd
011-86-2-7022156-8

If you know the name of the product, you can find out who makes it in the **Products & Services Directory, page 5.**

AYDIN CONTROLS
414 Commerce Dr
Ft Washington, PA 19034
215-542-7800
Contact: Geri Hennessey
■ Products & Services
DDP systems
Graphic display terminals
Intelligent (programmable) terminals
Interactive systems

Branch Sales Offices:

CA Palo Alto
Aydin Energy
3180 Hanover St
415-493-3939

CA Manhattan Bch
Aydin Controls
Box 3010; Civic Ctr Sta
213-545-4182

DC Washington
Aydin Controls
475 L'Enfant Plaza
202-488-4138

FL Orlando
Aydin Controls
4105 Lake Conway Woods
305-859-8123

MD Rockville
Aydin Controls
13206 Twinbrook Pkwy 103
301-770-1086

MA Tyngsboro
Aydin Controls
15 Lakeview Ave
617-649-7472

TX Spring
Aydin Controls
4059 Evening Tr
713-444-7740

WI Bristol
Aydin Controls
20821 82 St
312-395-8130

AUSTRALIA
Melbourne
Datatel
3-7 Raglan St
03-699-7614/7920

DENMARK

Glostrup
Technitron ApS
Smedeland 8
2-96-98-22

ENGLAND

Edgware
Progma Ltd
29 High St
01-952-8471

FINLAND

Helsinki
Oy Telinter
Valjastic 10

FRANCE

Sevres 92310
Tekelec Air Tronic
Rue Carle Vernet BP 2
1-027-75-35

GERMANY, WEST

Munich
HMW Data Sys GmbH
Siemensstr 5
089609-3660

INDIA

New Delhi
Aviation Dev Consultants
C-87 Defence Colony
625189

ISRAEL

Ramaf-Gan
Applied Tech Svcs Ltd
Box 8153
03-716855

ITALY

Rome
Technitron Srl
Via Mangili 20
805647

ITALY

Milan
Technitron Srl
Via California 12
02-489-0312

JAPAN

Tokyo
Pentel Electns Ltd
7-11 Shinkawa 1 Chome Chuo-Ku
03-553-2371

NETHERLANDS

Amsterdam
Technitron B V
Box 7542 Schiphol Airp E
020-458755

NORWAY

Oslo 6
Data Inform
Box 39 Skoyenanssen
02 26 55 70

REPUBLIC OF CHINA

Taipei, Taiwan
Syscom Computer Eng Co
Box 48-130
7514504

SPAIN

Madrid
Aupoca S A
Narcisco Iglesias, Barajas
46-859-58

SWEDEN

Farsta
Tel Inter Aktiebolag
Box 59
0894-0490

AZURDATA INC

Richland Sky Pk
Richland, WA 99352
509-946-1683
Contact: Janice Lillig

■ Products & Services

Bar code readers
Data entry terminals, portable
Remote job entry terminals

Branch Sales Offices:**CA Newport Beach**

Azurdata Inc
1300 Quail Ct
714-833-7921

CA

El Cerrito
Azurdata Inc
6946 Fairview Dr
415-233-5826

CA

Richmond
Azurdata Inc
3451 Collins Ave
415-235-8120

GA

Lithonia
Azurdata Inc
6399 Evansmill Way
404-482-6020

IL

Edwardsville
Azurdata Inc
21 Belmont Pl
618-345-7300

MA

Framingham
Azurdata Inc
Box 3028
617-877-9632

MN

Minneapolis
Azurdata Inc
4950 Colfax Ave S
612-825-2505

MO

St Louis
Azurdata Inc
13120 Amiot Dr
314-576-4411

MO

St Louis
Azurdata Inc
7478 Stratford
314-576-4411

NJ

Matawan
Azurdata Inc
9 Honeysuckle Ln
201-566-5990

NY

Summit
Azurdata Inc
34 Maple St
201-522-9555

NY

Huntington
Azurdata Inc
5 Bantry Ct
201-522-9555

OH

Lakewood
Azurdata Inc
14701 Detroit Ave
216-521-5140

PA

Bridgeville
Azurdata Inc
548 Hunters Path Rd
412-344-4488

TX

Arlington
Azurdata Inc
2719 Ave E
817-277-5731

TX

Richardson
Azurdata Inc
Box 1947
214-234-515

WA

Kirkland
Azurdata Inc
1022 First St
206-827-1552

WA

Seattle
Azurdata Inc
1762 6 Ave S
206-624-8410

ONTARIO, CANADA

Etobicoke ON
Azurdata Inc
Box 83; Islington Sta B
416-625-5934

BASF SYSTEMS

Crosby Dr
Bedford, MA 01730
617-271-4000
Contact: John W Ehrlich

■ Products & Services

Cartridges
Cassettes
Disc drives, floppy
Discs, floppy
Disc packs
Tape, magnetic

Branch Sales Offices:

CA Santa Monica
BASF Systems
1307 Colorado Av
213-451-8781

IL

Melrose Pk
BASF Systems
1800 N 30 Av
312-343-6618

MD

Rockville
BASF Systems
670 Lofstrand La
301-424-7100

NY

Clifton
BASF Systems
Box 2089
201-546-9111

TX

Dallas
BASF Systems
13612 Midway Rd
214-233-6607

ONTARIO, CANADA

Rexdale
BASF Canada Ltd
10 Constellation Ct
416-677-1280

QUEBEC, CANADA

Montreal
BASF Canada Ltd
5850 Cote de Liesse Rd
514-341-5411

GERMANY, WEST

Mannheim
BASF Aktiengesellschaft
Sparte M & N/Verkauf;
Gottlieb-Daimler-Strasse 10
49/621-40081

BASIC FOUR CORP

PO Box C11921
Santa Ana, CA 92711
714-731-5100
Contact: Donald Schnitter

■ Products & Services

Front-end processors
Minicomputers
Remote network processors
DDP systems
Word processors, communicating

Branch Sales Offices:

AL Birmingham
Computer Services Corp
200 Bank for Savings Bldg
205-328-2974

AK

Achorage
Microfilm Alaska Ltd
3500 Eide St
907-272-6724

AZ

Phoenix
Data Systems of Arizona
2222 W Encanto Blvd
602-257-0965

CA	Los Angeles Basic Four Corp 2500 Wilshire Blvd 213-380-0180	MN	Edina R W London & Co 6600 France Ave S 612-927-4628	TX	Dallas Basic Four Corp 4101 McEwen 214-387-4882
CA	San Francisco Basic Four Corp 1633 Old Bayshore Hwy 415-692-5665	MO	Creve Coeur Basic Four Corp 12300 Olive Street Rd 314-878-5710	TX	Houston Basic Four Corp 6161 Savoy Dr 713-789-7400
CA	Irvine Basic Four Corp 2600 Michelson Dr 714-833-9543	NV	Reno Hubco Data Products 979 Bible Way 702-322-4444	TX	San Antonio Holmes & Shaw 84 Northeast Loop 410 512-341-6641
CA	San Diego Basic Decisions 4655 Ruffner St 714-565-4802	NJ	Clark Basic Four Corp 67 Walnut Ave 201-574-0700	UT	Murray Hubco Data Products 5248 Pinemont Dr 801-262-3457
CA	Tustin MAI International 17822 E 17 St 714-832-2111	NM	Albuquerque Total Business Systems 4801 Indian School Rd 505-265-3511	VA	Richmond Systems Engineering Computer Co 6600 W Broad St 804-281-6456
CO	Denver Basic Computers 4155 E Jewell 303-753-0044	NY	Buffalo Computer Task Group 800 Delaware Ave 716-882-8000	WA	Tacoma Allied Business Systems Tacona Mall Office Bldg 206-383-5640
CT	Fairfield Basic Four Corp 140 Sherman St 203-255-5471	NY	E Syracuse Computer Task Group 6700 Old Collamer Rd 315-463-6276	WA	Spokane Hubco Data Products 12720 E Nora Ave 509-928-5431
CT	Weathersfield Basic Four Corp 1290 Silas Deane Hwy 203-563-8221	NY	New York Basic Four Corp 300 E 44 St 212-697-5340	BEEHIVE INTERNATIONAL 4910 Amelia Earhart Dr Salt Lake City, UT 84125 801-355-6000 Contact: Carl Rasmussen ■ Products & Services Intelligent (programmable) terminals Interactive systems Remote job entry terminals Video data terminals (KSR) Video data terminals (RO) Branch Sales Offices: CA Costa Mesa Beehive International 3190 G Airport Loop Dr 714-540-8404 CO Sunnyvale Beehive International 1022 W Maude 408-738-1560 FL Altamonte Springs Beehive International 251 Maitland Ave 305-830-4666 IL Arlington Heights Beehive International 415 W Golf Rd 312-593-1565 MA Woburn Beehive International 304 Cambridge Rd 617-933-0202 NY New York Beehive International 420 Lexington Ave 212-682-2760 OH Centerville Beehive International 245 Elmwood Dr 513-435-7073 PA Plymouth Meeting Beehive International 580 West Germantown Pike 215-825-0243 UT Salt Lake City Beehive International 4910 Amelia Earhart Dr 801-355-6000 VA Falls Church Beehive International 7777 Leesburg Pike 703-356-5133	
FL	Miami Computer Management Systems 1525 NW 167 St 305-625-0531	NY	Huntington Station Basic Four Corp One Huntington Quadrangle 516-694-8334		
GA	Atlanta Basic Four Corp 1875 Century Blvd 404-321-1022	NY	Rochester Computer Task Group 183 Main St E 716-325-4220		
GA	Atlanta Basic Four Corp 1875 Century Blvd 404-321-1022	NC	Charlotte Basic Four Corp 5950 Fairview Rd 704-554-0382		
HI	Honolulu Basic Business Computers of Hawaii 1221 Kapiolani Blvd 808-524-1193	OH	Cincinnati Basic Four Corp 644 Linn St 513-621-1100		
ID	Boise Hubco Data Products 152 Cole Rd 208-377-2320	OH	Cleveland Computer/Dynamics 15500 Commerce Pk Dr 216-433-4540		
IL	Oakbrook Basic Four Corp 2015 Spring Rd 312-986-6500	OK	Tulsa Computek Computing Corp 7489 E 46 Pl 918-622-5305		
IL	Oakbrook Basic Four Corp 2625 Butterfield Rd 312-920-9420	OR	Portland Basic Computer Systems 0234 SW Bancroft St 503-227-7700		
IN	Indianapolis Computer Management Systems 6610 N Shadeland 317-842-1830	PA	Erie Erie Custom Computer Applications 745 W 39 St 814-868-4634		
KS	Kansas City Basic Four Corp 3100 Brdwy 816-756-2620	PA	Pittsburgh Computer Task Group Two Allegheny Ctr 412-323-8600		
LA	New Orleans The Computer Group One Shell Square 504-581-3700	PA	King of Prussia Basic Four Corp Valley Forge Plaza 215-265-9565		
MD	Columbia Basic Four Corp 10025 Gov Warfield Pkwy 301-792-0257	TN	Memphis NLT Computer Services Corp 2600 Nonconah Blvd 901-345-3293		
MA	Dedham Basic Four Corp 990 Washington St 617-329-3800	TN	Nashville NLT Computer Services Corp National Life Center 615-256-7600		

BEHLMAN ENGINEERING CORP

1142 Mark Ave
Carpinteria, CA 93013
805-684-8311
Contact: Edward C Bertolet

■ **Products & Services**
Power supplies, uninterruptible; line correctors, etc.

Branch Sales Offices:

AZ Phoenix
Davis Co
3431 N 43 St
602-955-2266
CA Los Angeles
T L Snitzer Co
9005 Exposition Blvd
213-836-6170
CA Cupertino
T L Snitzer Co
10320 DeAnza Blvd
408-257-8333
CA Del Mar
T L Snitzer Co
Box 805
714-226-0305
FL Satellite Beach
Reynolds & Assoc
476 N A1A
305-773-4700
MD Rockville
Farrell Assoc
416 Hungerford Dr
301-424-9460
MA Needham
Addelco
56 Pickering
617-444-4754
MN St Paul
Dytec North
1821 University Ave
612-645-5816
PA Chester Springs
Letronix
Rt 100
215-458-8977

Want even more information
on products?

Turn to **UpDate Service Card,**
page 201.

**BELL & HOWELL
DISPLAY DEVICES**

4000 Birch St
Newport Beach, CA 92660
714-752-7602
Contact: Phil Drachman

■ **Products & Services**
Video data terminals (RO)

Branch Sales Offices:

CA Palo Alto
Bell & Howell Display Devices
2465 E Bayshore Rd
415-858-2181
CA Newport Beach
Bell & Howell Display Devices
4000 Birch St
714-752-7602
UT Salt Lake City
Bell & Howell Display Devices
Box 15068
801-972-8000

**BELL & HOWELL DISPLAY DEVICES
TELEMATION DIV**

3485 W 2100 S
Salt Lake City, UT 84119
801-972-8000
Contact: Dave Quebbeman

■ **Products & Services**

Data content monitors
Telecommunications monitor
Tape punch/reader, paper
Graphic display terminals

Branch Sales Offices:

CA Palo Alto
Bell & Howell Display Devices
2465 E Bayshore
415-858-2181
CA Newport Beach
Bell & Howell Display Devices
4000 Birch St
714-752-7602
UT Salt Lake City
Bell & Howell Display Devices
3485 W 2100 S
801-972-8000

BELL SYSTEM**AT&T ASSOC TELEPHONE CO**

195 Broadway
New York, NY 10007
Contact: Larry Angelini
■ **Products & Services**
Facsimile-service carriers
Message (including telegraph) carriers
Telephone companies
Digital service units
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Modems, wideband, half-group band
Modems, wideband, group band
Discs, floppy
Remote line printers
Teleprinters, impact
Teletypewriters
Automatic answering units
Automatic calling units
Data communications consultants

BILLINGS COMPUTER CORPORATION

2000 E Billings Ave
Provo, UT 84601
800-453-1404
Contact: Mark Knudson

■ **Products & Services**
Front-end processors
Minicomputers
Packet processors
Remote network processors
Acoustic couplers
Modems, voice-grade, medium speed
DDP systems
Add-on main memory
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Graphic display terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Video data terminals (KSR)
Word processors, communicating
Data communications consultants
Data com. softw, distr. dp systems vend.
Lease and resale organizations
Maintenance organizations

Branch Sales Offices:

CA Anaheim
Cal-Disk
2921 E La Palma
800-854-6187
PA Blue Bell
Billings Computer Corp
1777 Walton Rd
215-628-9955

**BOEING COMPUTER SERVICES
COMPANY**

177 Madison Ave
Morristown, NJ 07960
201-540-7700

Contact: W Thomas MacNew

■ **Products & Services**
Timesharing/service bureaus

Branch Sales Offices:

AK Anchorage
Boeing Computer Services Co
3230 C St
907-278-1511
CA El Segundo
Boeing Computer Services Co
871 S Nash St
213-640-0210
CA Sunnyvale
Boeing Computer Services Co
310 Potrero
408-245-8550
CA San Francisco
Boeing Computer Services Co
425 California St
415-392-6565
CO Englewood
Boeing Computer Services Co
7995 E Prentice Blvd
303-770-2630
GA Norcross
Boeing Computer Services Co
6855 Jimmy Carter Blvd
404-449-6515
IL Chicago
Boeing Computer Services Co
35 E Wacker
312-781-7900
KS Wichita
Boeing Computer Services Co
453 S Webb Rd
316-687-3386
MA Wellesley
Boeing Computer Services Co
40 William St
617-237-9814
MI Dearborn
Boeing Computer Services Co
One Parklane Blvd
313-271-8000
NE Omaha
Boeing Computer Services Co
7171 Mercy Rd
402-397-2401
NY New York
Boeing Computer Services Co
825 Third Av
212-486-7240
OH Cleveland
Boeing Computer Services Co
20600 Chagrin
216-921-0800
OR Portland
Boeing Computer Services Co
2104 SW 5 Av
503-228-0213
PA Philadelphia
Boeing Computer Services Co
Scott Plaza Ind Hwy
215-522-3600
TX Dallas
Boeing Computer Services Co
1111 W Mockingbird Lane
214-630-4701
VA Vienna
Boeing Computer Services Co
7980-90 Gallows Court
703-821-6200
WA Seattle
Boeing Computer Services Co
6510 S Center Blvd
206-773-8683

BRITISH COLUMBIA, CANADA

Vancouver
BCS Canada Ltd
134 Abbott St
604-688-2266

ENGLAND

Watford
Boeing Computer Centres Ltd
31 Claréndon Rd
011-44-923-38321

**BOLT BERANEK & NEWMAN INC
COMPUTER SYSTEMS DIV**

50 Moulton St
Cambridge, MA 02138
617-491-1850
Contact: John McQuillan
■ Products & Services
Concentrators
Front-end processors
Minicomputers
Packet processors
Remote network processors
DDP systems
Computer/communications interfaces
Data security devices, softw. security mod.
Protocol converters
Data communications consultants
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.
Data com. softw, independ. softw houses
Maintenance organizations
Timesharing/service bureaus

Branch Sales Offices:

DC Arlington
1701 N Ft Myer Dr
703-524-4870

BOSCHERT INC

384 Santa Trinita Ave
Sunnyvale, CA 94086
408-732-2400
Contact: Steve Johnson
■ Products & Services
Power supplies, uninterruptible; line correctors, etc.

Branch Sales Offices:

AZ Scottsdale
Fred Board Assoc
7353 Sixth Ave
602-994-9388
CA Mission Viejo
The Powerhouse
24552 Dardania Ave
714-830-5666
IL Rolling Meadows
Sumer Inc
1675 Hicks Rd
312-991-8500
MA Waltham
Datcom Inc
55 Moody St
617-891-4600
MI Brighton
SAI Mktg Corp
Box N
313-227-1786
MN Minneapolis
Stan Clothier Co
7423 Washington S
612-944-3456
NH Amherst
Boschert
River Rd
603-673-7636
NJ Marlton
Boschert
136 Briar Ct
609-983-6240

PA Willow Grove
BGR
2500 Office Ctr
215-657-3301

TX Dallas
Microsystems Mktg
13777 N Central Expwy
214-238-7157

VA Lynchburg
Glen White Assoc
311 Old Forest Rd
804-384-1538

WA Seattle
ES/Chase Co
5950-6 Av S
206-762-4824

ONTARIO, CANADA

Ontario
Munro Elect
7171 Torbram Rd
416-676-1042

DENMARK

Copenhagen
Scansupply
20 Nannasgade; DK-2200
01-83-50-90

ENGLAND

Thame; Oxon
Memec Ltd
Thame Pk Ind Est

GERMANY, WEST

Vaterstetten
Boschert
Mississauga Primelstrasse 32
08106-8644

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

BO-SHERREL CO

6101 Jarvis Ave
Newark, CA 94560
415-792-0354
Contact: Sylvia Frederickson
■ Products & Services
Line drivers
Modems, limited distance

BOSTON FINANCIAL & EQUITY CORP

712 Beacon St
Boston, MA 02215
617-261-2750
■ Products & Services
Concentrators
Front-end processors
Message switchers
Minicomputers
Multiplexers, frequency division
Multiplexers, time division
Multiplexers, intelligent
Multiplexers, group band
Remote network processors
Acoustic couplers
Digital service units
Modems, limited distance
Modems, voice-grade, low-speed
Add-on main memory
Cartridges
Cartridge drives
Cassettes
Cassette drives
Disc drives, floppy
Disc drives, large
Tape, magnetic
Tape drives, magnetic
Tape, paper
Tape punch/reader, paper
Badge readers
Bar code readers

Batch terminals
Graphic display terminals
Intelligent (programmable) terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Automatic answering units
Automatic calling units
Cables, electrical prefabricated extender
Data access arrangement devices
Switches, data communications, automatic
Switches, data communications, manual
Lease and resale organizations
Used equipment

BOWMAR/ALI INC

531 Main St
Acton, MA 01720
617-263-8365
Contact: Hajo Koester
■ Products & Services
Multiplexers, time division
Error rate detectors

Branch Sales Offices:

CA Mountain View
CSS Telecommunications
Specialist
2680 Bayshore Frontage Rd
415-964-4335
CT Dariell
Massini Assoc
Box 2044
203-323-9945
MD Edgewater
Commart Inc
3910 W Shore Dr
301-261-4344

BRADLEY TELECOMMUNICATIONS

117 Ft Lee Rd
Leonia, NJ 07605
201-461-5903
Contact: Frank Bradley
■ Products & Services
Electrical-parameters test equipment
Tech control centers
Telecommunications monitor

Branch Sales Offices:

CA Newport Beach
Helfrich Co
1831 Kings Rd
714-631-2300
CA Walnut Creek
Helfrich Co
1566 Spring Brook Rd
415-938-9577
CA Lakewood
Helfrich Co
4149 Sebrun Ave
213-420-1466
GA Atlanta
Datec Customer Service Inc
2200 Edgemore Dr
404-622-3196
MD Edgewater
Commart Inc
3910 W Shore Dr
301-261-4344
MN Minneapolis
Rae Assoc
7317 Cahill Rd
612-835-2100
NJ Harrington Pk
Glasgal Communication Services
103 First St
201-768-8082

NY Brooklyn
Transmission Acceptance Co
1634 68 St
212-232-7561

OH Columbus
Gerhard & Assoc
2228 Fairfax Rd
614-688-9751

WA Bellevue
Data Power Sales Co
2221 79 NE
206-453-8200

THE BRAEGEN CORP
20740 Valley Green Dr
Cupertino, CA 95014
408-255-4200
Contact: Alex Reid
■ Products & Services
DDP systems
Add-on main memory
Cartridge drives
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Batch terminals
Intelligent (programmable) terminals
Interactive systems
Remote line printers
Remote job entry terminals
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)
Data com. softw, distr. dp systems vend.
Data com. softw, intel. term. vendors
Maintenance organizations

Branch Sales Offices:

CA Rodondo Bch
Braegen Corp
213-679-9577

CA Orange
Braegen Corp
714-639-3696

CA San Francisco
Braegen Corp
415-495-0673

CA Santa Clara
Braegen Corp
408-249-9030

CO Denver
Braegen Corp
303-371-1694

CT Greenwich
Braegen Corp
212-736-8873

FL Norcross
Braegen Corp
404-449-4610

IL Rosemont
Braegen Corp
312-693-6030

MD Rockville
Braegen Corp
301-770-1464

MA Waltham
Braegen Corp
617-890-4850

MI Southfield
Braegen Corp
313-559-5750

MO St Louis
Braegen Corp
314-968-4314

NJ Union
Braegen Corp
201-686-7100

NY NY
Braegen Corp
212-682-7451

OH Cleveland
Braegen Corp
216-362-7280

PA Bala Cynwyd
Braegen Corp
215-667-1740

PA Pittsburgh
Braegen Corp
412-922-5336

TX Arlington
Braegen Corp
817-461-5522

TX Dallas
Braegen Corp
214-661-2326

TX Houston
Braegen Corp
713-776-3840

WA Bellevue
Braegen Corp
206-747-9321

BRAEMER COMPUTER DEVICES INC

11950 12 Ave S
Burnsville, MN 55337
612-890-5135
Contact: Richard Morris
■ Products & Services
Cassette drives

Branch Sales Offices:

AL Huntsville
Alpha Marketing Inc
904 Bob Wallace Av
204-533-0766

FL Ft Lauderdale
Interface Dynamics
1430 NE 60 St
305-772-7998

GA Atlanta
Alpha Mktg
771 Miami Cir NE
404-231-0534

IL Des Plaines
Coombs Assoc Inc
1001 E Touhy
312-298-4830

IN Carmel
Carter-McCormic-Peirce
1717 E 116 St
317-844-4175

IN Indianapolis
Coombs Assoc
Box 19061
317-897-5424

IA W Des Moines
Nevco Inc
730-34 St Pl
515-225-9866

MA Cambridge
Media Systems Inc
139 First St
617-876-0164

MI Farmington
Carter-McCormic-Peirce
23995 Freeway Pk Dr
313-477-7700

MO Kansas City
Nevco Inc
1715 Baltimore
816-421-1751

MO St Louis
Nevco Inc
10132 Glenfield Terr
314-843-7406

NJ Englewood
Tecnimat
500 Grand Ave
201-461-8686

NY Cazenovia
Naylor Electronic Co Inc
9 Clark St
315-655-8174

OH Cleveland
Carter-McCormic-Peirce
22650 Lorain Rd
216-779-5100

OH Dayton
Carter-McCormic-Peirce
4977 Northcutt Pl
513-222-7700

OK Tulsa
Norcom Inc
3340 S Memorial Blvd
918-664-9526

OR Portland
Tasco Inc
9999 SW Wilshire
503-292-1473

PA Dresher
J Fishman & Assoc
1645 Dublin Rd
215-646-3666

PA Pittsburgh
Carter-McCormic-Peirce
409 Beatty Rd
412-372-4415

TX Dallas
Norcom Inc
4450 Sigma Rd
214-386-4888

TX Houston
Norcom Inc
9720 Town Pk
713-988-0022

WA Bellevue
Tasco Inc
606-110 Ave NE
206-453-1414

WI Milwaukee
Coombs Assoc Inc
712 S 12 St
414-671-1945

BRK ELECTRONICS

780 McClure Rd
Aurora, IL 60504
312-851-7330
■ Products & Services
Fire Detection/Protection Equipment

BROOMALL INDUSTRIES INC

700 Abbott Dr
Broomall, PA 19008
215-328-1040
Contact: Dir of Mktg & Sales
■ Products & Services
Digital plotters
Interactive systems

Branch Sales Offices:

CA Sunnyvale
Larken Ind
580 Weddell Dr
408-744-1930

FL Satellite Bch
General Technology
596B Sherwood Av
305-777-1133

WA Seattle
Delcom Sales
144 SW 153 St
206-248-0090

BRITISH COLUMBIA, CANADA

Glen Waverly, Victoria
J Hadland Pty
7 Hampshire Rd
560-2366

QUEBEC, CANADA

Pointe Claire
F P Baudin Assoc
6600 Trans Can Hwy
514-620-1288

AUSTRIA

Wien
Computeq GmbH
Schwindgasse 18
65-42-19

NEW ZEALAND

Auckland
W & K McLean Ltd
Box 3097
587-037

BTI COMPUTER SYSTEMS

870 W Maude Ave
Sunnyvale, CA 94086
408-733-1122

Contact: P M Johnson
■ Products & Services
DDP systems

Branch Sales Offices:

CA Sunnyvale
BTI
870 W Maude Ave
408-733-1122

CA Anaheim
BTI
300 S Harbor Blvd
714-533-7161

MA Braintree
BTI
28 River St
617-843-4700

MN Minneapolis
BTI
3001 Metro Dr
612-854-1122

MO St Louis
BTI
111 W Port Plaza
314-878-8110

NJ Cherry Hill
BTI
900 Dudley Ave
609-662-1122

NJ Piscataway
BTI
225 Old New Brunswick Rd
201-457-0600

TX Dallas
BTI
1545 W Mockingbird La
214-630-2431

BUNKER RAMO CORP/INFO SYS DIV

35 Nutmeg Dr
Trumbull, CT 06609
203-377-4141

Contact: Walter Clark
■ Products & Services
DDP systems

Intelligent (programmable) terminals
Interactive systems
Terminal controllers

Branch Sales Offices:

CA Los Angeles
Bunker Ramo Corp
One Wilshire Blvd
213-623-3590

CA San Francisco
Bunker Ramo Corp
450 Sansome St
415-391-0255

CO Aurora
Bunker Ramo Corp
14291 E 4 Ave
303-344-2432

CT Bloomfield
Bunker Ramo Corp
800 Cottage Grove Rd
203-243-2904

GA Atlanta
Bunker Ramo Corp
5600 Roswell Rd
404-252-2004

IL Chicago
Bunker Ramo Corp
150 South Wacker Dr
312-782-4294

MI Grosse Pointe
Bunker Ramo Corp
63 Kercheval Ave
313-964-0690

NY NY
Bunker Ramo Corp
77 Water St
212-248-3400

OH Cincinnati
Bunker Ramo Corp
8041 Hosbrook Rd
513-793-8015

TX Dallas
Bunker Ramo Corp
2997 LBJ Frwy
214-243-5511

VA Arlington
Bunker Ramo Corp
1500 Wilson Blvd
703-524-8700

WA Bellevue
Bunker Ramo Corp
13029 Northrup Way
206-882-1114

BUNKER RAMO/ELECTRONIC SYSTEMS

PO Box 5009
Westlake Village, CA 91359
213-889-2211

Contact: Dan Li Cahill
■ Products & Services

Acoustic couplers
Digital service units
Fiber optic systems
Interactive systems
Computer/communications interfaces
Data access arrangement devices
Data security devices, encoder/decoders
Satellite delay compensation units

For further catalog information, turn to
UpDate Service Card, page 201.

BURROUGHS/REDACTRON CORP

95 Horse Block Road
Yaphank, NY 11980
516-924-0700

Contact: Attn: Product Mgr

■ Products & Services
Word processors, communicating

Branch Sales Offices:

AZ Phoenix
Burroughs/Redactron Corp
3030 N Central Ave; Suite 1016
602-263-5052

CA Newport Beach
Burroughs/Redactron Corp
1900 Quail St
714-752-5261

CA Fresno
Burroughs/Redactron Corp
1007 N Van Ness Ave
209-237-3811

CA Los Angeles
Burroughs/Redactron Corp
4015 Wilshire Blvd
213-487-2727

CA Sacramento
Burroughs/Redactron Corp
1803 Tribute Rd
916-929-5006

CA San Diego
Burroughs/Redactron Corp
7801 Mission Ctr Ct 228
714-291-0443

CA San Francisco
Burroughs/Redactron Corp
255 California St No 901
415-956-5580

CA Santa Barbara
Burroughs/Redactron Corp
1910 De La Vina St
805-962-2733

CT Bridgeport
Burroughs/Redactron Corp
2330 Main St
203-366-9395

DC Arlington
Burroughs/Redactron Corp
2361 S Jefferson Davis Highway;
Ste 720
703-979-1900

FL Coral Gables
Burroughs/Redactron Corp
302 Bird Rd
305-444-6146

GA Atlanta
Burroughs/Redactron Corp
340 Interstate No-Ste 170
404-955-2367

IL Chicago
Burroughs/Redactron Corp
150 S Wacker Dr; Ste 1750
312-236-6814

IL Springfield
Burroughs/Redactron Corp
550 North St
217-528-8991

IN Indianapolis
Burroughs/Redactron Corp
3590 N Meridian
317-924-5795

KY Louisville
Burroughs/Redactron Corp
2922 Taylor Blvd
502-635-7496

ME Portland
Burroughs/Redactron Corp
777 Broadway
207-767-3281

MD Baltimore
Burroughs/Redactron Corp
2511 St Paul St
301-889-3400

MA Boston
Burroughs/Redactron Corp
133 Federal St
617-482-6300

MI Flint
Burroughs/Redactron Corp
2960 Flushing Rd
313-232-0177

MI Grand Rapids
Burroughs/Redactron Corp
308 Waters Bldg
616-459-0296

MI Lansing
Burroughs/Redactron Corp
1615 E Michigan Ave
517-484-4511

MI Saginaw
Burroughs/Redactron Corp
2115 N Center Rd
517-793-1529

MI Southfield
Burroughs/Redactron Corp
24567 NW Highway
313-355-3373

- MN** Minneapolis
Burroughs/Redactron Corp
2205 Nicollet Ave
612-871-1279
- MS** Jackson
Burroughs/Redactron Corp
601 W Capitol St
601-353-6386
- NE** Omaha
Burroughs/Redactron Corp
900 S 75th St
402-397-2640
- NH** Manchester
Burroughs/Redactron Corp
475 2nd St
603-625-8958
- NJ** Clifton
Burroughs/Redactron Corp
66 Mt Prospect Ave; Plaza 66
201-472-2900
- NM** Albuquerque
Burroughs/Redactron Corp
939-B San Pedro; PO Box 8365
505-265-8441
- NY** Huntington Station
Burroughs/Redactron Corp
1 Huntington Quadrangle 4N-12
516-694-7323
- NY** Latham
Burroughs/Redactron Corp
Herbert Drive
518-783-9545
- NY** New York
Burroughs/Redactron Corp
919 Third Ave
212-759-2730
- NC** Charlotte
Burroughs/Redactron Corp
1125 E Morehead St
704-374-0822
- NC** Fayetteville
Burroughs/Redactron Corp
136 McPherson Church Rd
919-868-5178
- NC** Greensboro
Burroughs/Redactron Corp
1105 E Wendover Ave
919-272-5565
- NC** Greenville
Burroughs/Redactron Corp
3202 S Memorial Dr; PO Box 3216
919-758-2413
- NC** Raleigh
Burroughs/Redactron Corp
719 Tucker St
919-821-4050
- OH** Cincinnati
Burroughs/Redactron Corp
1519 Central Pkwy
513-421-0622
- OH** Cleveland
Burroughs/Redactron Corp
1503 Brookpark Rd
216-398-0155
- OH** Columbus
Burroughs/Redactron Corp
642 W Broad St
614-876-6391
- OH** Dayton
Burroughs/Redactron Corp
3880 Kettering Blvd
513-294-5311
- OK** Oklahoma City
Burroughs/Redactron Corp
107 NW 23rd St
405-524-2311
- OK** Tulsa
Burroughs/Redactron Corp
2828 E 51st St; Ste 103
918-749-6481
- OR** Portland
Burroughs/Redactron Corp
1909 NE Union
503-282-3245
- PA** Bala Cynwyd
Burroughs/Redactron Corp
1 Bala Cynwyd Plaza
215-835-6570
- PA** Camp Hill
Burroughs/Redactron Corp
905 Kranzel Dr
717-761-6102
- SC** Charleston
Burroughs/Redactron Corp
2086 Harley
803-554-5100
- TX** Dallas
Burroughs/Redactron Corp
1140 Empire Central; Ste 130
214-634-7840
- TX** El Paso
Burroughs/Redactron Corp
908 E Yandell
915-532-6223
- TX** Houston
Burroughs/Redactron Corp
2309 Richmond Ave
713-529-4128
- TX** Antonio
Burroughs/Redactron Corp
6326 Sovereign Dr; Ste 250
512-342-3183
- VA** Richmond
Burroughs/Redactron Corp
4915 Radford Ave
804-353-3965
- WA** Seattle
Burroughs/Redactron Corp
321 Minor Ave No
206-623-4940
- WI** Milwaukee
Burroughs/Redactron Corp
541 N Broadway
414-276-5430
- BRITISH COLUMBIA, CANADA**
Vancouver
Redactor of Vancouver Inc
2158 W 12th Ave
- MANITOBA, CANADA**
Winnipeg
A Lloyd Clark Co Ltd
326-330 William Ave
204-942-2201
- ONTARIO, CANADA**
London
Office World
712 Dundas St
519-433-0635
- ONTARIO, CANADA**
Ottawa
Redactron Division
1335 Carling Ave
613-728-3721
- ONTARIO, CANADA**
Toronto
Redactron Div; Burroughs
Business Machines Ltd
124 Merton St; 3rd Flr
416-482-9006
- QUEBEC, CANADA**
Montreal
Redactron Div; Burroughs
Business Machines Ltd
1550 Ouesi Boul de Maisonneuve;
Suite 312
514-931-9491
- AUSTRALIA**
North Sydney
Sigma Data Corp Pty Ltd
12th Flr, 157 Walker St; PO Box
663
- AUSTRIA**
Vienna
Berthold und Stempel Ges mbH
Gruengasse 16
222-577657
- BELGIUM**
Meise
Stephane De Cruyener
NV Ahrend SA, Steenweg op
Brussel 1
02-2695531
- DENMARK**
Copenhagen
Max Bodenhoff A/S
Landgreven 7
146-304
- ENGLAND**
Isleworth/Middlesex
Business Data Products Ltd
Data House; 143 Clocktower Rd
56-07-905
- ENGLAND**
London
Burroughs Machines Ltd
Dominant House; 85 Queen
Victoria St
- ENGLAND**
Paris
S A Burroughs
202 Qual de Clichy; 92118 Clichy
7393320
- FINLAND**
Helsinki
Oy Paragon AB
Meke Laenkatu 84; POB 13
75661
- GERMANY, WEST**
Stuttgart
Burroughs/Redactron Corp
Boebinger Strasse 8
646586-88
- HONG KONG**
New Mercury House
Cable & Wireless Systems Ltd
GPO Box 4477
- INDONESIA**
Kuningan; Jakarta Selatan
Burroughs/Redactron Corp
Setiabudi Bldg; Jin H Rangkyo
Rasuna Sald
- JAPAN**
Tokyo
Burroughs/Redactron Corp
7.1 Chome, Koijmachi; Chiyoda-Ku
- MALAYSIA FED OF**
Kuala Lumpur
Burroughs/Redactron Corp
403 4th Flr Wisma MPI; Jalan
Raja Chulan
209422-24527
- MEXICO**
Mexico
Burroughs/Redactron Corp
Ransom SA Degv; Rio Ama Zonas
57-A
905-46-95-95
- NETHERLANDS**
Hilversum
Burroughs/Redactron Corp
Postbus 105; Simon Stevinweg 13
035/393-33
- NORWAY**
Oslo
Burroughs/Redactron Corp
Facit A/S; Fridtjof Nansens
Plass 7
418240
- PHILIPPINES**
Makati, Rizal
Burroughs/Redactron Corp
102 Aguirre St; Legaspi Village

SINGAPORE

Burroughs/Redactron Corp
Ste 1401-1404; 14th Flr Tunas
Bldg, Anson Rd
2207516

SOUTH AFRICA

Johannesburg
Burroughs/Redactron Corp
Burroughs House; 25 Anderson St
836-3877

SWEDEN

Alvidaberg
Burroughs/Redactron Corp
Facit AB; Fack
208-1000

SWEDEN

Stockholm
Burroughs/Redactron Corp
Facit AB; Luxbacken 1, Lilla
Essingen

SWITZERLAND

Zurich
Burroughs/Redactron Corp
Rieterstrasse 35; Post Box 207

THAILAND

Bangkok
Burroughs/Redactron Corp
304-B Mahaesak Rd, Silom

BURROUGHS CORP

One Burroughs Place
Detroit, MI 48232
313-972-7000
Contact: Getry CisLo
■ Products & Services
Concentrators
Message switchers
Minicomputers
Remote network processors
DDP systems
Add-on main memory
Cartridges
Cartridge drives
Cassettes
Cassette drives
Disc drives, floppy
Disc drives, large
Disc packs
Tape, magnetic
Tape drives, magnetic
Batch terminals
Data entry terminals, portable
Facsimile terminals
Intelligent (programmable) terminals
Interactive systems
Remote job entry terminals
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.

C&W INCOTEL LTD

One Penn Plaza
New York, NY 10001
212-594-8340
Contact: V A Littlefield
■ Products & Services
Message switchers
Minicomputers
Data communications consultants
Data com. softw, independ. softw houses

Branch Sales Offices:

NY New York
C&W Incotel Ltd
One Penn Plaza
212-594-8340

ENGLAND

London
C&W Incotel Ltd
Mercury House
01-242-4433

CABLE & WIRELESS LTD

420 Lexington Ave
New York, NY 10017
212-490-0610
Contact: Ronald W. Hobbah
■ Products & Services
International record carriers
Satellite carriers

CADO SYSTEMS CORP

2771 Toledo St
Torrance, CA 90503
213-320-9660
Contact: Joel Leslie
■ Products & Services
Message switchers
Minicomputers
Remote network processors
DDP systems
Batch terminals
Intelligent (programmable) terminals
Remote line printers
Remote job entry terminals
Video data terminals (KSR)
Word processors, communicating

CAL DATACOM

1844 Carnegie Ave
Santa Ana, CA 92705
800-854-0171
Advertising page 138
Contact: Walt Becher
■ Products & Services
Acoustic couplers
Remote line printers
Remote job entry terminals
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)

CALIFORNIA COMPUTER PRODUCTS INC

2411 W LaPalma Ave
Anaheim, CA 92801
714-821-2011
Contact: Ron Cook
■ Products & Services
Minicomputers
Graphic display terminals
Intelligent (programmable) terminals
Interactive systems
Remote line printers
Lease and resale organizations
Maintenance organizations
Timesharing/service bureaus

Branch Sales Offices:

AZ Tempe
California Computer Products Inc
1414 W Broadway
602-894-9468
CA Orange
California Computer Products Inc
1717 Orangewood Ave
714-639-3690
CA San Francisco
California Computer Products Inc
101 Howard St
415-495-0673
CA Santa Clara
California Computer Products Inc
3255 Scott Blvd
408-249-0936

CO Montbello
California Computer Products Inc
4755 Paris St
303-371-192
CO Englewood
California Computer Products Inc
14 Inverness Dr E
303-770-1950
GA Norcross
California Computer Products Inc
150 Technology Park
404-448-4522
IL Rosemont
California Computer Products Inc
9801 W Higgins Rd
312-696-1770
KS Shawnee Mission
California Computer Products Inc
6811 West 63rd St
913-362-0707
MD Rockville
California Computer Products Inc
6110 Executive Blvd
301-770-1464
MA Waltham
California Computer Products Inc
470 Totten Pond Rd
617-890-0834
MI Southfield
California Computer Products Inc
17000 W Eight Mile Rd
313-569-3220
MN Bloomington
California Computer Products Inc
1 Appletree Square
612-854-3448
MO St Louis
California Computer Products Inc
1516 S Brentwood Blvd
314-968-4637
NJ Union
California Computer Products Inc
1620 Route 22
201-686-7100
OH Cleveland
California Computer Products Inc
15887 Snow Rd
216-362-7280
OH Dayton
California Computer Products Inc
4977 Northcutt Pl
513-276-5247
OK Tulsa
California Computer Products Inc
9920 E 42 St
918-663-7392
OR Beaverton
California Computer Products Inc
10700 W Beaverton
503-646-1186
PA Bala Cynwyd
California Computer Products Inc
111 Presidential Blvd
215-667-2895
PA Pittsburgh
California Computer Products Inc
Parkway Center
412-922-3430
TX Dallas
California Computer Products Inc
13610 Midway Rd
214-387-0902
TX Houston
California Computer Products Inc
9000 Southwest Frwy
713-776-3840
WA Bellevue
California Computer Products Inc
13401 Bellevue-Redmond Rd
206-747-9321

ALBERTA, CANADA

Calgary
CalComp Canada
315 10 Ave SE
403-261-3720

ONTARIO, CANADA

Rexdale
CalComp Canada
55 Westmore Dr
416-745-9610

ONTARIO, CANADA

Ottawa
CalComp Canada
120 Hwy 15
613-820-8463

QUEBEC, CANADA

St Laurent
CalComp Canada
100 Alexis Nihon Blvd
514-744-6455

ARGENTINA

Buenos Aires
Electronica del Atlantico SRL
Sarmiento 1630
351201/359242

AUSTRALIA

Artarmom
Datamatic Pty Inc
60/40 Dickson Ave
433-333

BOLIVIA

La Paz
Latindata Bolivia LTDA
Casilla 1811
323669/328786

BRAZIL

Sao Paulo
DataCal Equipamentos
Electronicos LTDA: Avenida
Ibirapuera 3383
611552

CHILE

Santiago
Latindata LTDA
Holanda 1310
42209/460205

COLOMBIA

Bogota
Procalculo SA
Carrera 7 74-09
2350388/2350155

DENMARK

Copenhagen
BLT Agenturer A/S
GI Koge Landvej 55
161-100

ECUADOR

Quito
Secor
Casilla A-4744

ENGLAND

Bracknell, Berks
CalComp Ltd
The Ring
50211

FINLAND

Helsinki
O Y Mercantile A R
Linnanrakentajantie 4
780322

FRANCE

Paris
CalComp SA
43 rue de la Breche-Aux-Loups
344-1507

GERMANY, WEST

Dusseldorf
CalComp GmbH
Werfstrasse 37
501193

GREECE

Athens
Infodata Computer Sys Ltd
5 Koniari St
642-1368

HONG KONG

Hong Kong
Dataprep Ltd
Watsons Estate-N Point
5-717213

INDIA

Ahmedabad
Industrial Electronic Instr
30 NBK Society: Ellis Bridge
79-281

IRAN

Tehran
Multicorp Intl Service Co Ltd
Ave Soraya 130
831035

ISRAEL

Tel Aviv
Eastronics Ltd
11 Rozanis St
475-51

ITALY

Milan
CalComp SpA
Via Farnesse 1
4983341

JAPAN

Minato-ku-Tokyo
CalComp Pacific Inc
3-5-27 Roppongi
03-585-7101/02/03

KOREA REP (REP)

Seoul
Oriental Computer Eng
CPO Box 289
265-7265

MALAYSIA FED OF

Kuala Lumpur
Dataprep Ltd
Jalan Ampang
488122

MEXICO

Mexico, DF
Equipos y Sistemas de Mexico SA
Av Nuevo Leon 253-4 Piso
277-6004

NETHERLANDS

Amstelveen
CalComp BV
Box 444
457-351

NORWAY

Oslo
Morgenstierne & Co A/S
Kongshellegate 3
372940

SPAIN

Madrid
Hispano Electronica SA
Comandante Zorita 8
233-1601

SWEDEN

Vaxholm
Saven Data
Strandgatan 3
764-31580

CALIFORNIA INSTRUMENTS

5150 Convoy St
San Diego, CA 92111
714-279-8620
Contact: Jack Cope

■ Products & Services

Power supplies, uninterruptible; line correctors, etc.

Branch Sales Offices:

AL Huntsville
Saber Assoc
800-327-1193
AZ Scottsdale
Williams Assoc
602-947-4297
CA Los Altos
Jay Stone & Assoc
415-948-4563
CA Inglewood
Basic Systems Corp
213-673-4300
CA San Diego
Basic Systems Corp
714-279-9641
CO Denver
Williams Assoc
303-373-4730
DC Washington DC
Powell-Pendergraph
301-656-4535
FL Pompano Beach
Saber Assoc
800-432-3007
FL Longwood
Saber Assoc
800-432-3007
FL Bradenton
Saber Assoc
800-432-3007
IL Chicago
EIA
312-271-3774
IN Indianapolis
EIA
317-257-7231
KS Shawnee Mission
EIA
913-362-0919
LA Baton Rouge
SESCO-Baton Rouge
504-924-5102
MA Waltham
McBar Assoc
617-890-0233
MN Minneapolis
Varco Assoc
612-425-4455
MO Leasburg
EIR
314-895-4100
NJ Cedar Grove
KLS
201-785-4450
NJ Willow Grove
Powell-Pendergraph
215-657-0330
NM Albuquerque
Williams-Assoc
505-255-1638
NY Fayetteville
Martin P Andrews
315-637-3144
NC Raleigh
Saber Assoc
800-327-1193
OH Dayton
Hocker Assoc
513-298-8638
OH North Olmsted
Hocker Assoc
216-734-4433
TX Houston
SESCO-Houston
713-588-9656

Products are listed alphabetically in the **Products & Services Directory, page 5**

TX Dallas
SESCO-Dallas
214-231-9364

VA Glen Allen
Powell-Pendergraph
804-264-2341

WA Seattle
Datacom
206-285-2525

CALIFORNIA MICROWAVE INC
990 Almanor Av
Sunnyvale, CA 94086
408-732-4000
Contact: S M Day
■ Products & Services
Earth stations
Error rate detectors
Tech control centers
Telecommunications monitor
Satellite delay compensation units

Branch Sales Offices:

CA Woodland Hills
California Microwave EDO
Box 2800
213-992-8000

CO Aurora
California Microwave
14211 E 4 Ave
303-344-4650

KS Overland Park
California Microwave
9290 Bond
913-492-9460

NJ Ft Lee
California Microwave
1530 Palisade Av
201-947-0910

VA Arlington
California Microwave
1730 N Lynn St
703-841-1774

CAMBRIDGE TELECOMMUNICATIONS

Five Old Concord Rd
Burlington, MA 01803
617-273-0980
Contact: Rubin Gruber
■ Products & Services
Concentrators
Front-end processors
Inverse multiplexers
Line sharing units
Message switchers
Minicomputers
Modem sharing units
Multiplexers, intelligent
Packet processors
Port selectors
Port sharing units
Remote network processors
Protocol analyzers
Network management centers
Tech control centers
DDP systems
Batch terminals
Intelligent (programmable) terminals
Remote job entry terminals
Terminal controllers
Code converters
Computer/communications interfaces
Modem eliminators
Protocol converters
Switches, data communications, automatic
Data communications consultants
Data com. softw, comms processor vend.

CANDELA ELECTRONICS

926 W Maude Ave
Sunnyvale, CA 94086
408-738-3800
Contact: Attn: Rich Barry, Dir Mktg
■ Products & Services
Automatic answering units
Automatic calling units

CANOGA DATA SYSTEMS

6740 Eton Ave
Canoga Park, CA 91303
213-888-2003
Contact: Richard McCaskill
■ Products & Services
Modem sharing units
Multiplexers, time division
Modems, limited distance
Modems, wideband, half-group band
Modems, wideband, group band
Modems, wideband, super-group band
MIL 188C adapters
Parallel line extenders
Cables, optical fiber
Computer/communications interfaces
Modem eliminators

Branch Sales Offices:

AZ Scottsdale
BFA Corp
4426 N Saddlebag Trail
602-994-5400

CA Sherman Oaks
Electronic Marketing Specialists
13837 Ventura Blvd
213-990-4244

CA Sunnyvale
Electronic Marketing Specialists
599 N Mathilda Ave
408-245-9291

CA Tustin
Electronic Marketing Specialists
2600 Walnut Ave
714-832-9920

CO Denver
BFA Corp
12014 E 46 Ave Campus Six
303-371-2422

CT Wallingford
IMF Sales Associates Inc
200 Mansion Rd
203-265-0215

IL Oak Brook
S J Kopp Assoc Inc
823 Commerce Dr
312-887-1040

MD Bethesda
S & S Assoc
4924 Hampden Ln
301-654-1434

MA Wakefield
IMF Sales Associates Inc
Lakeside Office Pk
617-245-8900

MI Ann Arbor
ARC Assoc
2500 Packard Ave 202
313-973-1133

MN Minneapolis
RAE Assoc
7317 Cahill Dr
612-835-2100

NJ Englewood
Tecnimat
500 Grand Ave
201-569-4200

NM Albuquerque
BFA Corp
3705 Westerfield NE
505-292-1212

NM Las Cruces
BFA Corp
532 E Amador
505-523-0601

NY Rochester
RG Engineering
3100 Monroe Ave
716-385-3021

NY Selkirk
RG Engineering
6 Sherbrook Dr
518-439-3070

OH Cleveland
ARC Assoc
21360 Center Ridge Rd
216-333-8375

OH Miamisburg
ARC Assoc
2946 Asbury Ct
513-859-3040

PA Pittsburgh
ARC Assoc
160 N Craig St
412-681-8609

PA Jenkintown
Stein Instrumentation Corp
413 Johnson St
215-885-2370

TX Richardson
Barry Sales Inc
709 Lingco Dr
214-234-0255

TX Houston
Barry Sales Inc
6400 Westpark
714-784-5860

UT Salt Lake City
BFA Corp
395 Lawndale Dr
801-466-6522

WA Vancouver
Instrumentation/Control Systems
Inc
10514 NW 26 Ave
206-573-5600

BRITISH COLUMBIA, CANADA
Vancouver
Electronetic Systems Ltd
1033 Davie St
604-687-5696

ONTARIO, CANADA
Downsview
Electronetic Systems Ltd
62 Alness St
416-661-3673

ONTARIO, CANADA
Ottawa
Electronetic Systems Ltd
34 Bentley Ave
613-226-1232

QUEBEC, CANADA
Montreal
Electronetic Systems Ltd
ESSO Bldg; 3 Place Ville Marie
514-878-1168

Want to receive announcements of new products?
Turn to **UpDate Service Card**,
page 201.

CAPEX CORP
PO Box 13529
Phoenix, AZ 85002
602-264-7241
Contact: J A Shomer
■ Products & Services
Data com. softw, independ. softw houses

Branch Sales Offices:

CA Downey
Capex Calif
8221 E Third St
213-862-5102

GA Atlanta
Capex Atlanta
3781 NE Exprwy
404-41-8415

IL Hinsdale
Capex Illinois
201 E Ogden
312-986-8618

NJ Clifton
Capex New Jersey
1136 Clifton Ave
201-472-7000

CARDKEY SYSTEMS

20660 Bahama St
Chatsworth, CA 91311
213-998-7560
Contact: Brad Korbesmeyer
■ Products & Services
Data security devices, personal ident. sys.

CARTERFONE COMMUNICATIONS
CORP

1111 W Mockingbird Lane; Suite 1400
Dallas, TX 75247
214-630-9700
Contact: George Goodwyn
■ Products & Services
Acoustic couplers
Modems, voice-grade, low-speed
Cassette drives
Disc drives, floppy
Tape punch/reader, paper
Intelligent (programmable) terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)
Code converters
Data access arrangement devices
Protocol converters
Data com. softw, intel. term. vendors
Lease and resale organizations
Maintenance organizations
Used equipment

Branch Sales Offices:

CA Los Angeles
Carterfone Comm Corp
16946 Sherman Way
213-342-6540

CA Santa Clara
Carterfone Comm Corp
3370 Montgomery Dr
408-241-3432

CA Burlingame
Carterfone Comm Corp
1515 Bayshore Hwy
415-697-0857

CA Garden Grove
Carterfone Comm Corp
12812 Garden Grove Blvd
714-534-2510

GA Atlanta
Carterfone Comm Corp
3300 NE Expwy
404-458-5973

IL Rolling Meadows
Carterfone Comm Corp
4300-I Lincoln
312-358-8700

MD Rockville
Carterfone Comm Corp
170 Rollins Av
301-770-6220

MI Oak Park
Carterfone Comm Corp
14600 W Eight Mile Rd
313-967-1503

NY Fairfield
Carterfone Comm Corp
12 Spielman Rd
201-575-6500

PA King of Prussia
Carterfone Comm Corp
1003 W 9 Ave
215-337-3900

TX Dallas
Carterfone Comm Corp
2636 Walnut Hill Ln
214-350-1294

TX Houston
Carterfone Comm Corp
8000 Harwin Dr
713-780-0034

WA Seattle
Carterfone Comm Corp
1152 Industry Dr
206-575-1607

CD JOHNSON/ASSOC LTD

56 Sparks St 100
Ottawa, ON K1P 5A9
613-238-6069
Contact: Attn: VP Mktg
■ Products & Services
DDP systems
Cassettes
Cassette drives
Disc drives, floppy
Discs, floppy
Disc drives, large
Intelligent (programmable) terminals
Remote job entry terminals
Terminal controllers
Word processors, communicating
Data com. softw, distr. dp systems vend.
Maintenance organizations

CENTIGRAM CORP

155A Moffett Pk Dr
Sunnyvale, CA 94086
408-734-3222
Contact: George Glaser
■ Products & Services
Audio response units
Word recognition units

CENTRONICS DATA COMPUTER CORP

One Wall St
Hudson, NH 03051
603-883-0111
Advertising page 133
Contact: Charles C Clemente
■ Products & Services
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Word processors, communicating

Branch Sales Offices:

AZ Tempe
Centronics
1730 W 10 Place
602-968-7285

CA Costa Mesa
Centronics
130 McCormick Av
714-979-6650

CA Sunnyvale
Centronics
550 Weddell Dr
408-744-1244

FL Miami
Centronics
1515 NW 167 St
305-620-1521

GA Atlanta
Centronics
3050 Presidential
404-455-8740

IL Arlington Heights
Centronics
738 W Algonquin Rd
312-956-0095

MD Columbia
Centronics
5565 Sterret Place
301-596-3914

MA Woburn
Centronics
200 W Cummings Pk
617-935-6150

NJ Mt Laurel
Centronics
137 Gaither Dr
609-234-8266

NY Rochester
Centronics
474 Thurston Rd
716-235-4852

NY Plainview
Centronics
88 Sunnyside Blvd
516-433-1963

OH Brecksville
Centronics
8879 Brecksville Rd
216-234-1505

TX Arlington
Centronics
1900 E Randol Mill Rd
817-461-5711

TX Houston
Centronics
10200 Hempstead
713-688-1455

ONTARIO, CANADA

Mississauga
Hamilton Avnet Elect
3688 Nashua Dr
416-677-7432

ONTARIO, CANADA

Mississauga
Centronics
1225 Arrowood Dr
416-625-0770

ONTARIO, CANADA

Ottawa
Hamilton Avnet Elect
1735 Courtwood Cr
613-226-1700

QUEBEC, CANADA

Dorval
Centronics
765 Lajoie St
514-636-6451

QUEBEC, CANADA

St Laurent
Hamilton Avnet Elect
2670 Paulus St
514-331-6443

EIRE (IRELAND)

Droghda
Centronics Ireland BV
Donore Rd, Droghda A
41-8991

ENGLAND

London
Centronics UK (Ltd)
Petersham House, Harrington Rd
01-581-1011

FRANCE

Paris
Centronics SA
50 Rue Dombasle
828-4051

GERMANY, WEST

Frankfurt
Centronics GmbH
Arabella Center, Lyoner Strasse
44-48
666-1021

ITALY

Milan
Centronics SpA
Via Santa Valeria S
809-516

CENTURY DATA SYSTEMS INC A
XEROX CO

Box 3056
Anaheim, CA 92803
714-632-7500
Contact: Dave Davidson
■ Products & Services
Disc drives, floppy
Disc drives, large

Branch Sales Offices:

CA Orange
Century Data Systems Inc
571 N Poplar
714-978-0800

CA Santa Clara
Century Data Systems Inc
3375 Scott Blvd
408-727-2833

FL Vero Beach
Century Data Systems Inc
2925 Cardinal Dr
305-567-5700

MA Waltham
Century Data Systems Inc
69 Hickory Dr
617-890-1670

MI Lansing
Century Data Systems Inc
6425 S Pennsylvania
517-393-8088

NY Cold Spring Harbor
Century Data Systems Inc
5 Main St
516-367-4101

TX Houston
Century Data Systems Inc
330 N Belt E Box 60012
713-820-2500

TX Dallas
Century Data Systems Inc
13773 N Central Expwy
214-699-1682

DENMARK

2880 Bagsvaerd
Digitek APS
Vadstrupvej 35-NR 5.1
02/440077

ENGLAND

Bracknell Berks
Century Data Systems
Cory House The Ring
0344/50211

FINLAND

0811 Helsinki 81
O Y Mercantile AB
Linnanrakentajantie 4
80/780322

FRANCE

Paris
CalComp SA
43 Rue De La Breche-Aux-Loups
345-4974

GERMANY, WEST

Werftstrasse 37
Century Data Systems
4000 Dusseldorf 11
0211/501193

ISRAEL

Haifa
SDSI Ltd
Box 5101
04/661195

ITALY

20146 Milano
Telcom SRL
Via Civitali 75
02/4047648

SWEDEN

16204 Vallingby
Teleinstrument AB
Maltesholmsvaegen 138
08/380370

SWITZERLAND

Usterstrasse 120
Rodata AG
8600 Duebendorf
0411/8201613

CHATSWORTH DATA CORP

20710 Lassen
Chatsworth, CA 91311
213-341-9200
Contact: Frank Lefkowitz
■ Products & Services
Remote job entry terminals

Branch Sales Offices:

CO Golden
J F Hurlbut
622 Gardenia
303-279-7796

HI Honolulu
Aloha Assoc
1919 Hunnewell St

MD Gaithersburg
Wright Co
19104 Rhodes Way
301-840-1928

MA Southboro
Victor Assoc
304 Turnpike Rd
617-48-4010

MN Brooklyn Pk
Tele-Terminals
7216 Boone Ave

NY New York
John Walker
Inwood Station
212-899-8200

TX Richardson
Computer Marketing
Box E
214-231-1426

WA Seattle
Distributed Data Products
1200 Westlake Ave N
206-283-4044

CHESS

955 Bannock St
Denver, CO 80204
303-573-5135
Contact: Bob Willman
■ Products & Services
Lease and resale organizations
Maintenance organizations

CHROMATICS INC

3923 Oakcliff Ind Ct
Atlanta, GA 30340
404-447-8797
Contact: Terry Hughey

Branch Sales Offices:

AL Huntsville
Col Ins Co
800-327-6600

AZ Phoenix
Thorson Co
602-956-5300

CA Thorson West
415-964-9300

CA US Graphics Mktg Corp
213-880-4062

CO Littleton
Davis & Assoc
303-795-1400

DE Bartlett Assoc
301-656-3061

FL Ft Lauderdale
Col Ins Co
800-432-4480

GA Atlanta
Col Ins Co
800-327-6600

HI Honolulu
Thorson Co
800-524-8634

IL Dytec/Central Inc
312-394-3380

IL Dytec/South Inc
314-731-5400

IN Dytec/Central Inc
317-247-1316

IA Dytec/Central Inc
319-683-2282

IA Professional Mktg Corp
612-474-5939

KS Lenexa
Dytec/South
913-888-0215

ME Bartlett Assoc
617-879-7530

MI Detroit
WKM Assoc
313-588-2300

MO Hazelwood
Dytec/South Inc
314-731-5400

NM Albuquerque
Thorson Co
505-265-5655

NY White Plains
Bartlett Assoc
914-949-6476

NY Holcomb
Bartlett Assoc
716-657-6309

OH Cleveland
WKM Assoc
216-267-0445

OH Dayton
WKM Assoc
513-434-7500

OR Portland
DPM Inc
206-453-9082

PA Pittsburgh
WKM Assoc
412-892-2953

PA Wayne
Bartlett Assoc
215-688-7325

TX Ausin
Thorson Co
512-451-7527

TX Dallas
Thorson Co
214-233-5744

TX Houston
Thorson Co
713-771-3504

AUSTRALIA
Crows Nest NSW
TCG-439-6477

BELGIUM
Brussels
Spesi
02-37491-12

ENGLAND
Bournemouth
Techex Ltd
0202-293-115

FRANCE
Techdata
749-40-37

GERMANY, WEST
Techdata GmbH
31025-6

ISRAEL
Eidan Electronic Instrument Co
Ltd
533-221-533-242

JAPAN
Computers Int'l Japan
03-402-856

SOUTH AFRICA
Pretoria
Infodata Pty Ltd
01278-8141

SWEDEN
Teleinstrument AB
08-380-370

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

CINCINNATI BELL
617 Vine St
Cincinnati, OH 45202
513-397-3673
Contact: Adv Mgr
■ Products & Services
Telephone companies
Channel service units
Digital service units
Modems, limited distance
Modems, multipoint
Modems, multipoint
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Modems, wideband, half-group band
Modems, wideband, group band
Audio response units
Bar code readers
Batch terminals
Data entry terminals, portable
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teletypewriters
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)
Automatic answering units
Automatic calling units
Computer/communications interfaces
Data jacks and plugs
Pulse and signal regenerators
Switches, data communications, manual
Data communications consultants

CINCOM SYSTEMS INC
2300 Montana Av
Cincinnati, OH 45211
513-662-2300
Contact: Carole Rechtsteiner
■ Products & Services
DDP systems
Data communications consultants
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.
Data com. softw, independ. softw houses
Maintenance organizations

Branch Sales Offices:

CA Irvine
Cincom Systems
2151 Michelson Dr
714-955-0771

CO Denver
Cincom Systems
6825 E Tennessee Ave
303-388-2458

FL Miami
Cincom Systems
5915 Ponce De Leon
305-665-0451

GA Decatur
Cincom Systems
4151 Memorial Dr
404-296-5045

IL Des Plaines
Cincom Systems
2200 E Devon
312-297-2280

IA Des Moines
Cincom Systems
1200 35 St
515-223-1987

KS Shawnee Mission
Cincom Systems
10000 W 75 St
913-384-4386

MA Braintree
Cincom Systems
222 Forbes Rd
617-848-7988

MI Southfield
Cincom Systems
17117 W 9 Mile Rd
313-559-5650

MI Grand Rapids
Cincom Systems
3040 Charlevoix Dr
616-942-0982

MO Earth City
Cincom Systems
514 Earth City Plaza
314-291-0400

NY New York
Cincom Systems
501 Madison Av
212-752-3206

OH Cincinnati
Cincom Systems
2300 Montana Ave
513-662-2300

PA Pittsburgh
Cincom Systems
650 Smithfield St
412-232-3410

TX Dallas
Cincom Systems
6450 LBJ Frwy
214-661-0527

VA Fairfax
Cincom Systems
9934 Main St
703-591-1740

ONTARIO, CANADA
Mississauga
Cincom Systems
130 Dundas St E
416-279-4220

AUSTRALIA
Crows Nest
Cincom Systems
220 Pacific Hwy
02-439-3144

BELGIUM
Brussels
Cincom Systems
17-19 Rue Montoyer
32-02-511.65.48

CLARY CORP
320 W Clary Ave
San Gabriel, CA 91776
213-287-6111
Contact: John Machina
■ Products & Services
Power supplies, uninterruptible; line
correctors, etc.

Branch Sales Offices:

CA Emeryville
Ingalls Assoc
5915 Christie
415-658-5622

OR Portland
Ingalls Assoc
3511 SE Milwaukee Ave
503-232-7487

TX Houston
L P Spencer & Assoc
Box 12064
713-944-9291

C & L TERMINALS INC
1215 SE Ivon
Portland, OR 97202
503-231-0333
Contact: Ken Landgraner
■ Products & Services
Acoustic couplers
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
Disc drives, floppy
Teleprinters, impact
Teleprinters, non-impact
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Paper for terminals
Ribbons and supplies for terminals and
printers
Lease and resale organizations
Maintenance organizations

Branch Sales Offices:

CA San Jose
Edge Technology Inc
408-279-2284

CA Sacramento
Edge Technology Inc
916-441-2284

CMC MARKETING CORP
10611 Harwin Dr
Houston, TX 77036
713-995-4960
Contact: Attn: VP Mktg
■ Products & Services
Front-end processors
Add-on main memory
Disc drives, floppy
Disc drives, large
Intelligent (programmable) terminals
Teleprinters, impact
Teleprinters, non-impact
Video data terminals (KSR)

Video data terminals (RO)
Furniture, cabinets, terminal enclosures
Ribbons and supplies for terminals and
printers

COASTAL DATA PRODUCTS

1592 NW 159th St
Miami, FL 33169
305-625-7123
Contact: A R Taddeo
■ Products & Services
Badge readers
Intelligent (programmable) terminals

Branch Sales Offices:

- CA Paramount
Datamont Inc
7625 Rosecrans Ave
213-634-3000
- CA S San Francisco
Management Reporting Resources
Inc
220 E Grans
415-952-3400
- IL Chicago
ASDM Ltd
1728 N Wells
312-440-1988
- MI Milford
Milford Scientific Inc
203 Union St
313-685-8912
- NC Charlotte
GLS Inc
6140 Sharon Rd
704-364-5146
- OH Lakewood
Bill Gibbons Co
12900 Lake Ave
216-221-1900
- PA Reading
Automatic Office Sys
154 N 10 St
215-374-4028
- RI Cranston
Technical Aut Bus Sys
689 Atwood Ave
401-944-3681
- TX Irving
Noakes Data Communications
Box 3968
214-255-1151
- TX Richardson
Maron Data
300 Bishop
214-234-1230
- COLOMBIA
Bogota
Coldatos Ltda
Calle 30 A No 6-22

CODEx CORPORATION

20 Cabot Blvd
Mansfield, MA 02048
617-364-2000

Advertising pages 81-88

Contact: John W Pugh
■ Products & Services
Front-end processors
Inverse multiplexers
Line sharing units
Modem sharing units
Multiplexers, time division
Multiplexers, intelligent
Multiplexers, group band
Port sharing units
Remote network processors
Line drivers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed

Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Modems, wideband, group band
MIL 188C adapters
Tech control centers
Intelligent (programmable) terminals
Cables, electrical prefabricated extender
Data access arrangement devices
Data security devices, encoder/decoders
Select. & transfer equip., monitor & test
switch. equip.
Select. & transfer equip., patch. equip.
Select. & transfer equip., reconfig. equip.

Branch Sales Offices:

- CA Inglewood
Codex Corp
11222 La Cienega Blvd
213-641-9342
- DC Washington
Codex Corp
1010 Sixteenth St NW
202-223-2990
- IL Rosemont
Codex Corp
10600 W Higgins Rd
312-298-0800
- MA Dedham
Codex Corp
888 Washington St
617-329-2445
- NJ Irvington
Codex Corp
50 Union Av
201-373-6500
- TX Dallas
Codex Corp
13531 N Central Expwy
214-690-5221
- BELGIUM
Brussels
Codex Europe SA
158 Avenue de Tervuren
322-762.23.51
- JAPAN
Tokyo
Codex
Nakamura Bldg 2-8;1-chom
03-355-0432

COHERENT COMMUNICATIONS

85D Hoffman Lane
Central Islip, NY 11722
516-582-4044
Contact: Attn: VP Mktg
■ Products & Services
Multiplexers, frequency division
Modems, voice-grade, low-speed
Select. & transfer equip., monitor & test
switch. equip.
Select. & transfer equip., patch. equip.

COM/TECH SYSTEMS

44 Beaver St
New York, NY 10004
212-425-0733
Contact: Sam Sharin
■ Products & Services
Electrical-parameters test equipment
Error rate detectors
RTS emulator
Telecommunications monitor
Data jacks and plugs
Data security devices, encoder/decoders
Modem eliminators
Protocol converters
Data communications consultants

Branch Sales Offices:

- CA Santa Ana
Knott Engineering
1949 La Cuesta Dr
714-838-9289

- MI Gaithersburg
The Wright Co
19104 Rhodes Way
301-840-1928
- MN Minneapolis
Deerland Dist
2021 E Hennepin Av
612-331-6433
- NJ Harrington Pk
Glasgal Comm Serv
103 First St
201-768-8082
- NY New York
Glasgal Comm Serv
521 Fifth Av
212-687-2455
- NY Hauppauge
Datadyne Corp
185 Oser Av
516-231-7741
- PA Coopersburg
Pleasant Valley Assoc
RD1 Box 405
215-346-8684

For further catalog information,
turn to **UpDate Service**
Card, page 201.

COMARK CORP

257 Crescent St
Waltham, MA 02154
617-894-7000
Contact: Charles Breen
■ Products & Services
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Intelligent (programmable) terminals
Furniture, cabinets, terminal enclosures

Branch Sales Offices:

- CA Orange
Comark Corp
4302 E Walnut Ave
714-639-7920
- IL Bloomington
Technical Representatives Inc
1502 N Lee St
309-829-8080
- IN Columbus
Miltronics
3809 Colonial Dr
812-376-6321
- IA Cedar Rapids
Technical Representatives Inc
1930 St Andrews Dr NE
319-393-5510
- MD Silver Spring
Source Assoc
10300 Naglee Rd
301-431-0587
- MO Hazlewood
Technical Representatives Inc
320 Brookes Dr
314-731-5200
- NJ Upper Montclair
Computer Mktg Inc
530 Valley Rd
201-746-8668
- TX Dallas
Mycrosystems Marketing Inc
13777 N Central Expwy
214-238-7157

COMDATA CORP

8115 N Monticello
Skokie, IL 60076
312-677-3900
Contact: Walter Manning

■ Products & Services

Modem sharing units
 Multiplexers, frequency division
 Multiplexers, time division
 Multiplexers, intelligent
 Acoustic couplers
 Modems, limited distance
 Modems, multipoint
 Modems, multiport
 Modems, voice-grade, low-speed
 Modems, voice-grade, medium speed
 Modems, voice-grade, high-speed
 Cassettes
 Cassette drives
 Disc drives, floppy
 Tape, paper
 Tape punch/reader, paper
 Teleprinters, impact
 Teleprinters, non-impact
 Teletypewriters
 Video data terminals (KSR)
 Data access arrangement devices

COMDESIGN INC

340 S Kellogg, Ste A
 Goleta, CA 93017
 805-964-9852

Contact: Robert Alan Dolan

■ Products & Services
 Concentrators
 Front-end processors
 Multiplexers, intelligent
 Packet processors
 Computer/communications interfaces
 Data communications consultants

Branch Sales Offices:

AZ Tempe
 Qualtech
 610 W Broadway 201
 602-967-4655

CA Playa Del Rey
 Mark Assoc
 7913 W 81 St
 213-821-1052

CA San Jose
 Telemark
 826 N Winchester
 408-246-9616

CT Stratford
 Instruments Dynamics
 Foot of Broad St
 203-378-6019

IL Skokie
 Mar-Con Assoc
 4836 Main St
 312-675-6450

MD Rockville
 J-4 Systems
 51 Monroe Ste 1801
 301-762-7550

MA Wakefield
 Instrument Dynamics Inc
 Lakeside Office Pk
 617-245-5100

MI Center Line
 Dietrich & Assoc
 7200 E 10 Mile Rd
 313-754-6450

NM Albuquerque
 Qualtech
 130 Louisiana NE
 505-255-6100

NY Plainview
 TRAC Assoc
 88 Sunnyside Blvd
 516-674-6993

OH Cleveland
 Dietrich & Assoc
 1276 W Third St
 216-781-1855

OH Dayton
 Dietrich & Assoc
 333 W First St
 513-223-6042

PA Pittsburgh
 Dietrich & Assoc
 900 Clairton Blvd
 412-892-2992

PA Ambler
 Denco Data Equipment
 25 Skippack Pk
 215-542-9876

COMM-PRO ASSOC

638 14 St
 Manhattan Beach, CA 90266
 213-376-1344

Contact: Attn: VP Mktg

■ Products & Services
 Data communications consultants
 Data com. softw, independ. softw houses

Branch Sales Offices:

CA Manhattan Beach
 Comm-Pro Assoc
 350 N Sepulveda Blvd
 213-376-3694

COMMTX INC

2411 Crofton La
 Crofton, MD 21114
 301-721-3666

■ Products & Services
 Modems, multipoint
 Response-time monitors
 Network management centers
 Tech control centers
 Intelligent (programmable) terminals
 Protocol converters
 Data com. softw, intel. term. vendors

COMMUNICATIONS SATELLITE CORP

950 L'Enfant Plaza SW
 Washington, DC 20024
 202-554-6224

Contact: George Lawler

■ Products & Services
 Satellite carriers

COMPLETE COMPUTER SYSTEMS

159 Gibraltar Rd
 Horsham, PA 19044
 215-441-4200

Contact: Joseph O'Donnell

■ Products & Services
 Minicomputers
 DDP systems
 Cartridge drives
 Tape punch/reader, paper
 Interactive systems
 Video data terminals (KSR)
 Video data terminals (RO)
 Microfilm equipment, systems and services
 Power supplies, uninterruptible; line correctors, etc.

Branch Sales Offices:

NY New York
 Citisystems
 47 W 34 St
 212-695-4695

COMPRESSION LABS INC

10440 N Tartau Ave
 Cupertino, CA 95014
 408-725-0202

Contact: Cloyd Marvin
 ■ Products & Services
 Message switchers
 Remote network processors
 Parallel line extenders
 Tape punch/reader, paper
 Video data terminals (KSR)

Data compactor
 Data communications consultants
 Branch Sales Offices:

CA Anaheim
 Moxon Electronics
 1440 S State College Blvd
 714-635-7600

FL Orlando
 Col-ins-co
 1313 44 St
 305-423-7615

MD Gaithersburg
 Technical Sales Assoc
 19544 Club House Rd
 301-258-9790

MA E Boston
 Telephony NE
 80 Border St
 617-569-5310

NJ Ridgewood
 Instrument Sales Co
 171 E Ridgewood
 201-445-5210

COMPUGRAPHIC CORP

80 Industrial Way
 Wilmington, MA 01887
 617-944-6555

Contact: John Schepper

■ Products & Services
 Discs, floppy
 Tape, paper
 Word processors, communicating

Branch Sales Offices:

CA Fountain Valley
 MQI Computer Products
 18381 Bandilier Cir
 714-521-2005

CA San Francisco
 MQI Computer Products
 408-247-9443

IL Chicago
 Comtel/Pivan Engineering Co
 3535 W Peterson Ave
 312-539-4838

IN Indianapolis
 Comtel/Pivan Engineering Co
 317-253-1681

IA Cedar Rapids
 Comtel/Pivan Engineering Co
 319-377-9434

KS Kansas City
 Comtel/Pivan Engineering Co
 913-722-1030

MI Detroit
 W C Koepf Assoc
 313-459-9150

MN Minneapolis
 Comtel/Pivan Engineering Co
 612-835-3060

MO St Louis
 Comtel/Pivan Engineering Co
 314-567-3636

OH Chagrin Falls
 W C Koepf Assoc
 68 Olive St
 216-247-5129

OH Columbus
 W C Koepf Assoc
 513-733-8555

WI Milwaukee
 Comtel/Pivan Engineering Co
 414-786-1940

COMPUSCAN INC

900 Huyler St
 Teterboro, NJ 07608
 Contact: Gene Meher

■ Products & Services
 Front-end processors
 DDP systems

Intelligent (programmable) terminals
Interactive systems
Data com. softw, distr. dp systems vend.
Data com. softw, intel. term. vendors

COMPUK INC

63 Second Ave
Burlington, MA 01803
617-272-8100
Contact: Ted Magida
■ Products & Services
Graphic display terminals
Intelligent (programmable) terminals
Teleprinters, impact

COMPUTER AUTOMATION**NAKED MINI DIV**

2181 Dupont Dr
Irvine, CA 92713
714-833-8830
Contact: Sel Handler
■ Products & Services
Front-end processors
Minicomputers
Add-on main memory
Cartridge drives
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Tape punch/reader, paper
Intelligent (programmable) terminals
Interactive systems
Teletypewriters
Video data terminals (KSR)
Computer/communications interfaces
Data com. softw, distr. dp systems vend.

Branch Sales Offices:

CA Santa Ana
Computer Automation
59 Brookhollow Dr
714-546-9550

CA Santa Clara
Computer Automation
3218 Scott Blvd
408-985-6800

CO Denver
Computer Automation
3333 Quebec St
303-399-1383

FL Orlando
Computer Automation
999 Woodcock Rd
305-896-1440

GA Atlanta
Computer Automation
3781 Northeast Epwy
404-455-1649

IL Elk Grove Village
Computer Automation
2621 Greenleaf Ave
312-956-6400

KS Overland Park
Computer Automation
6300 West 75 St
913-384-3131

MA Waltham
Computer Automation
69 Hickory Dr
617-890-7190

MI Livonia
Computer Automation
29518 Five Mile Rd
313-261-5170

MN Bloomington
Computer Automation
2850 Metro Dr
612-854-2305

NJ Bloomfield
Computer Automation
400 Broadacres Dr
201-338-8300

NC Greenboro
Computer Automation
Box 19074

OH No Olmsted
Computer Automation
26777 Lorain Rd
216-777-8700

OH Cincinnati
Computer Automation
260 Northland Blvd
513-771-7530

OK Tulsa
Computer Automation
6111 E Skelly Dr
918-664-6991

PA King of Prussia
Computer Automation
503 Valley Forge Plaza
215-265-5770

TN Nashville
Computer Automation
2400 Crestmoor Rd
615-383-3315

TX Dallas
Computer Automation
2474 Manana St
214-350-5681

TX Houston
Computer Automation
9100 Southwest Freeway
713-981-8859

VA Falls Church
Computer Automation
7245 Arlington Blvd
703-560-7071

WA Bellevue
Computer Automation
300 120 Ave NE
206-455-9650

ONTARIO, CANADA
Toronto
Computer Automation
1262 Don Mills Rd
416-445-1635

AUSTRALIA
Mitcham, Victoria
Gulfco Computer Corp Pty Ltd
10 Monomeeth Dr

BELGIUM
Brussels
Geveke Electronique Et
Automation Belgique
119-121 Rue Antole France
02-241.45.50

DENMARK
Copenhagen
SC Metric A/S
Skodsborgvej 305; 2850 Naerum
02-80-4200

ENGLAND
Rickmansworth; Hertfordshire
CAI Ltd
Denham Way; Maple Cross

FINLAND
Helsinki
Finn Metric Oy
PL 6, Ahertajantie 6D
90-460-844

FRANCE
Versailles Cedex
Yrel Electronique Et
Informatique
64/70 Rue des Chantiers
950-22-24

GERMANY, WEST
Frankfurt/Main
Computer Automation GmbH
Bleichstrasse 60-62

GERMANY, WEST
Dusseldorf
Geveke Elektronik Und Automation
GmbH
Schlagelstrasse 9
0211/773082

INDIA
Bombay
Micronic Devices
109C Sion East
486170

ITALY
Milano
CAI SPA-Cal Colatori Automatismi
Industriali
Via Ferrante Aporti N.12
2043482

JAPAN
Tokyo
Nippon Automation Co
5-16-7 Shiba Minato-ku
455-6581

NETHERLANDS
Amsterdam
Geveke Elektronica En Automatise
Bv
Box 652
020-802802

NEW ZEALAND
Auckland
David Reid Data Products, Ltd
Box 2630
499-197

NORWAY
Oslo
Metric AS
Ekebergveien 312
02-282624

SPAIN
Barcelona
CIA Espanola de Organizacion
Informatica SA
C/Muntaner 550
212-49-08

SWEDEN
Stockholm
Scandia Metric AB
Banvaktsvagen 20
08-820400

SWITZERLAND
Wil
Datacare AG
Untere Bahnhofstr 19
073-22-05-92

COMPUTER COMMUNICATIONS INC

2610 Columbia St
Torrance, CA 90503
213-320-9101
Contact: Rob Deckman

■ Products & Services
Concentrators
Front-end processors
Message switchers

Branch Sales Offices:

CA Torrance
Computer Communications Inc
2610 Columbia St
213-320-9101

CA San Jose
Computer Communications Inc
8210 Claret Ct
408-295-4060

CO Littleton
Computer Communications Inc
1901 W Littleton Blvd
303-794-6758

IL Hinsdale
Computer Communications Inc
201 Ogden Ave
312-325-6950

MA Hingham
Computer Communications Inc
10 Industrial Pk Rd

NJ Saddle Brook
Computer Communications Inc
Park 80 Plaza W
201-368-0500

TX Richardson
Computer Communications Inc
725 S Central Expwy
214-783-0048

VA Alexandria
Computer Communications Inc
4600 Duke St
703-823-2777

WA Edmonds
Computer Communications Inc
100 2 Ave
206-771-8100

ONTARIO, CANADA
Willowdale
Computer Communications Inc
200 Consumers Rd
416-492-9808

COMPUTER CORP OF AMERICA

575 Technology Sq
Cambridge, MA 02130
617-491-3670
Contact: Attn: VP Mktg
■ Products & Services
Data communications consultants
Data com, softw, independ, softw houses
Lease and resale organizations
Timesharing/service bureaus

Branch Sales Offices:

CA San Francisco
Computer Corp of America
1750 Montgomery St
415-981-4762

NY New York
Computer Corp of America
122 E 42 St
212-867-6246

VA Arlington
Computer Corp of America
1600 Wilson Blvd
703-522-1717

COMPUTER DATACOM INC

17972 F Sky Park Circle
Irvine, CA 92714
714-540-6327
Contact: Neil Gleason
■ Products & Services
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed

COMPUTER DEVICES INC

25 North Ave
Burlington, MA 01803
617-273-1550
Contact: Richard W Herzfeld
■ Products & Services
Minicomputers
Bar code readers
Batch terminals
Data entry terminals, portable
Intelligent (programmable) terminals
Interactive systems
Remote job entry terminals
Teleprinters, non-impact
Teletypewriters
Word processors, communicating

Branch Sales Offices:

CA Sante Fe Springs
Computer Devices
14130 E Alondra Blvd
213-921-8451

CA Foster City
Computer Devices
1015 E Hillsdale Blvd
714-277-0993

IL Des Plaines
Computer Devices
2300 E Devon Av
312-298-6320

MA Burlington
Computer Devices
40 Mall Rd
617-273-1550

MI Southfield
Computer Devices
24333 Southfield Rd
313-557-4030

NJ Nutley
Computer Devices
361 Franklin Av
201-661-1181

NY New York City
Computer Devices
Two Penn Plaza
212-695-3055

NY White Plains
Computer Devices
One N Broadway
914-428-8288

PA Plymouth Meeting
Computer Devices
580 W Germantown Pike
215-828-1650

TX Dallas
Computer Devices
14841 Coit Rd
214-387-2301

TX Houston
Computer Devices
6776 Southwest Frwy
713-780-9097

Get new product information when it
breaks?
Turn to **UpDate Service Card, page
201.**

COMPUTER-LINK CORP

40 Ray Ave
Burlington, MA 01803
617-272-7400
Contact: Eugene P Brandeis
■ Products & Services
Cartridges
Disc packs
Tape, magnetic
Intelligent (programmable) terminals
Remote job entry terminals

Branch Sales Offices:

CA Long Beach
Computer-Link Corp
Box 3725
213-439-7446

IL Des Plaines
Computer-Link Corp
640 Pearson St
312-297-6767

NJ Union City
Computer-Link Corp
100 Manhattan Ave
201-865-4017

NY Lake Grove
Computer-Link Corp
51 Sarah Dr
516-585-3745

TX Dallas
Computer-Link Corp
Box 400824
214-386-7831

VA Woodbridge
Computer-Link Corp
Box 7
703-550-7383

ENGLAND

London
Computer-Link (UK)
38A Georgiana St

ITALY

Monza
Computer-Link (Italia)
Via E Borsa 10/12 20052
039-831756

COMPUTER OPTICS INC

Berkshire Ind Pk
Bethel, CT 06801
203-744-6720
Contact: Fred Sweeney
■ Products & Services
DDP systems
Badge readers
Batch terminals
Interactive systems

Branch Sales Offices:

CA Palo Alto
Computer Optics Inc
2465 E Bay Shore Dr
415-856-7551

CA Fullerton
Computer Optics Inc
1440 N Harbor Blvd
714-992-0520

CA Encino
Computer Optics Inc
5535 Balboa Blvd
213-981-4438

IN Hillside
Computer Optics Inc
415 W Harrison
312-449-3060

IN Indianapolis
H & H Sales
3232 Bluebell Ln
317-297-1876

MA Wellesley
Marketechs
148 Linden St
617-237-4343

MI Troy
Computer Optics Inc
1740 W Big Beaver Rd
313-649-5272

NJ Parsippany
Computer Optics Inc
1280 Rte 46
201-263-1161

NJ Cherry Hill
Computer Optics Inc
20 Brace Rd
609-429-2100

OK Tulsa
Computer Optics Inc
3035 E Skelly Dr
918-749-0518

TX Dallas
Computer Optics Inc
13608 Midway Rd
214-387-0025

TX Houston
Computer Optics Inc
8401 Westheimer
713-782-3204

WA Seattle
Distributed Data Products Inc
1200 Westlake Ave
206-283-4044

COMPUTER PRODUCTS SUPPLY CO

4 Professional Dr
Gaithersburg, MD 20760
301-840-9524
Contact: Attn: VP Mktg
■ Products & Services
Acoustic couplers
Modems, voice-grade, low-speed
DDP systems
Add-on main memory
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Tape, magnetic
Tape drives, magnetic
Teleprinters, impact
Video data terminals (KSR)
Word processors, communicating
Paper for terminals

COMPUTER ROOMERS INC

2737 Seelco St
Dallas, TX 75235
214-357-4671
Contact: Jerry G Kenchel
■ Products & Services
Furniture, cabinets, terminal enclosures

COMPUTER SCIENCES CORP

650 N Sepulveda Blvd
El Segundo, CA 90245
213-678-0311
Contact: Mort Bernheim
■ Products & Services
DDP systems
Switches, data communications, automatic
Data communications consultants
Data com. softw. comms processor vend.
Data com. softw. distr. dp systems vend.
Data com. softw. independ. softw houses
Maintenance organizations
Timesharing/service bureaus

Branch Sales Offices:

CA San Francisco
Infonet Div
50 California St
415-433-4000
CA El Segundo
Economic Models Ltd
220 Continental Blvd
213-678-0311
CA El Segundo
Data Services Grp Hdqtrs
650 N Sepulveda Blvd
213-678-0311
CA El Segundo
Commercial Div Hdqtrs
220 Continental Blvd
213-678-0311
FL Coral Gables
Infonet Div
255 Alhambra Cir
305-442-1213
GA Atlanta
Infonet Div
1597 NE Expwy
404-696-1013
IL Oak Brook
Infonet Div
815 Commerce Dr
312-325-7000
MD Silver Spring
System Sciences Div
8728 Colesville Rd
301-589-1545
NJ Hackensack
Infonet Div
One University Plaza
201-487-6200

NJ Paramus
Paid Prescriptions
235 Frisch Ct
201-845-9000
VA Falls Church
Systems Group Hdqtrs
6565 Arlington Blvd
703-533-8877

VA Arlington
Infonet Div
1616 N Fort Myer Dr
703-841-3500
QUEBEC, CANADA
Montreal
Computer Sciences Canada Ltd
Suite 367 Place du Canada
514-878-9811

BELGIUM
Brussels
Computer Sciences Europe
350/358 Ave Louise Box 1
02-648-5745

ENGLAND
London
Computer Sciences Europe
Heathcoat House 20 Savile Row
01-437-3043

THE COMPUTER SOFTWARE CO

6517 Everglades Dr
Richmond, VA 23225
804-276-9200
Contact: Thomas D Steel
■ Products & Services
Data communications consultants

Branch Sales Offices:

CA Anaheim
Computer Software Co
1717 S State College Blvd
714-634-0733
IL Park Ridge
Computer Software Co
1460 Renaissance Dr
312-635-6310
MN Minneapolis
Computer Software Co
1500 E 79th St
612-854-0489
OH Cleveland
Computer Software Co
24200 Chagrin Blvd
216-464-3580
TX Dallas
Computer Software Co
2915 LBJ Frwy
214-247-2004

AUSTRALIA
Alexandria
EDOS (Aust) Pty Ltd
204-218 Botany Rd
699-8555

MEXICO
Regidor
Computer Software Mexicana SA de CV
Villa Coapa
905-594-8615

SWEDEN
Balsta
SWEDOS Software AB
Rotevagen 10
08-777-4800

SWITZERLAND
Grenchen
Computer Software Co
Postfach 31
0041-65-83031

COMPUTER TECHNOLOGY

3014 Lake Shore Ave
Oakland, CA 94610
415-465-9000

COMPUTER TRANSCEIVER SYSTEMS INC

E-66 Midland Av
Paramus, NJ 07652
201-261-6800
Contact: Ed Moore
■ Products & Services
Data entry terminals, portable
Remote job entry terminals
Teleprinters, non-impact

Branch Sales Offices:

AZ Phoenix
Southwest Peripherals Co Inc
2875 Sky Harbor Blvd
602-267-7536
CA Torrance
Allen Edwards Assoc
2808 Oregon Ct
213-328-9770
CA San Jose
Digicom Data Products
1440 Koll Circle
408-279-8711
CO Denver
Data Systems Marketing
1155 Speer Blvd
303-573-5133
FL Orlando
F&M Assoc
Box 13705
305-851-5710
IL Chicago
H&H Sales
2007 W Sedgewick
312-871-8250
MD Silver Spring
Computer Complements
1110 Fidler Lane
301-589-2802
MA Needham
J J Wild
570 Hillside Av
617-444-2366
MO St Johns
Mid-West Marketing
3606 Woodson
314-426-2500
NY Pittsford
J Cameron Assoc
1 Grove St
716-385-1681
NY New York
Technitron International
625 Madison Ave
212-758-2790
PA Pittsburgh
WKM Assoc
90 Clairton Blvd
412-892-2953
TX Houston
Data Marketing Assoc
3330 Bering Dr
713-780-2511
WA Seattle
Rush S Drake Assoc Inc
6133 Sixth Ave S
206-763-2755
WI Brookfield
Delta Communications Inc
14640 W Greenfield
414-784-3663

COMPUTERWISE INC

4006 E 137 Tr
Grandview, MO 64030
816-765-3330
Contact: Attn: VP Mktg
■ Products & Services
Code converters
Computer/communications interfaces
Protocol converters

COMSHARE INC

3001 S State St
Ann Arbor, MI 48106
313-994-4800
Contact: Bruce Zewe
■ Products & Services
Timesharing/service bureaus

Branch Sales Offices:

AZ Phoenix
Comshare Inc
2224 W Desert Cove
602-997-9671

CA Los Angeles
Comshare Inc
700 Flower St
213-629-5551

CA San Francisco
Comshare Inc
Spear St Tower
415-777-2100

GA Atlanta
Comshare Inc
875 Johnson Ferry Rd NE
414-252-8911

IL Chicago
Comshare Inc
222 S Riverside Plaza
312-648-0910

IL Des Plaines
Comshare Inc
701 Lee St
312-298-9630

MA Wellesley
Comshare Inc
60 William St
617-235-3650

MI Southfield
Comshare Inc
17117 W Nine Mile Rd
313-559-1400

MN St Louis Pk
Comshare Inc
Shelard Tower
612-546-3556

MO Clayton
Comshare Inc
7777 Bonhomme
314-862-7212

NY New York
Comshare Inc
1114 Ave of the Americas
212-398-6800

NC Charlotte
Comshare Inc
One NCNB Plaza
704-373-0361

OH Cincinnati
Comshare Inc
Fifth and Race Tower
513-421-5020

OH Cleveland
Comshare Inc
Bond Court Bldg
216-687-0460

PA Bala-Cynwyd
Comshare Inc
111 Presidential Blvd
215-835-6644

PA Philadelphia
Comshare Inc
1700 Market St
215-564-3404

PA Pittsburgh
Comshare Inc
Five Gateway Center
412-355-0540

TX Bellaire
Comshare Inc
6565 W Loop S
713-667-2727

TX Dallas
Comshare Inc
8585 N Stemmons Frwy
214-630-8811

VA Arlington
Comshare Inc
1745 Jefferson Davis Hwy
703-524-1405

ONTARIO, CANADA

Rexdale
Comshare Inc
230 Galaxy Blvd
416-675-6363

BELGIUM
Brussels
Comshare Inc
Tweeackerkenstraat; 7 Rue des Deux
Eglises
02 230-85-45

ENGLAND

London
Comshare Inc
32-34 Great Peter St
01-222-5665

GERMANY, WEST

Cologne
Comshare Inc
Quatermarkt 5
0221-210897

JAPAN

Tokyo
Comshare Inc
5-4-14 Tsukiji Chuo-Ku
03-542-8681

For further catalog information, turn to **UpDate Service Card, page 201.**

COMTAL CORP

Box 5087
Pasadena, CA 91107
213-797-1175
Contact: John Tahl
■ Products & Services
DDP systems
Graphic display terminals
Intelligent (programmable) terminals
Interactive systems
Data com. softw. intel. term. vendors

COMTEC INFORMATION SYSTEMS INC

53 John St
Cumberland, RI 02864
401-724-8500
Contact: Glenn F Bowgren
■ Products & Services
Bar code readers
Batch terminals
Data entry terminals, portable
Intelligent (programmable) terminals
Remote job entry terminals
Teleprinters, impact

Branch Sales Offices:
MA Newton Highlands
Butler Assoc
82 Winchester St
617-965-1080

NJ Sterling
Bristol Data Products Corp
1390 Valley Rd
201-647-2362

PA Dresher
J Fishman & Assoc
1645 Dublin Rd
215-646-3666

COMTEK INC

4216 McCullough
San Antonio, TX 78212
512-828-0908
Contact: Attn: VP Mktg
■ Products & Services
DDP systems
Tape drives, magnetic
Badge readers
Intelligent (programmable) terminals
Interactive systems
Remote line printers
Remote job entry terminals
Data com. softw. distr. dp systems vend.

Branch Sales Offices:

AL Birmingham
Mid South Data Ind
2600 Creekview Dr
205-979-4300

FL Ft Lauderdale
S & L Business Products
3808 Davie Blvd
305-940-6121

GA Atlanta
Information Processing Sply
230 Murray Dr
404-455-7753

TX San Antonio
Comtek Inc
4216 Mc Cullough
512-828-0908

COMTEN INC

1950 W County Rd
St Paul, MN 55113
612-633-8130
Contact: Vern Yates
■ Products & Services
Concentrators
Front-end processors
Message switchers
Modem sharing units
Multiplexers, intelligent
Remote network processors
Acoustic couplers
Modems, limited distance
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Add-on main memory
Cartridge drives
Cassette drives
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Batch terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Automatic calling units
Select. & transfer equip., reconfig. equip.
Switches, data communications, manual
Data com. softw. comms processor vend.
Maintenance organizations

Branch Sales Offices:
CA Westminster
Comten Inc
14340 Bolsa Chica Rd
714-893-3561

CA Santa Monica
Comten Inc
225 Santa Monica Blvd
213-451-5412

CA San Mateo
Comten Inc
1700 S Amphlett Blvd
415-349-1612

CA Los Angeles
Comten Inc
9841 Airport Blvd
213-641-4390

CO Lakewood
Comten Inc
44 Union Blvd
303-985-9008

CT W Hartford
Comten Inc
1 Financial Plaza
203-527-4326

FL Orlando
Comten Inc
6900 S Orange Blossom Trail
305-859-9395

GA Marietta
Comten Inc
2480 Windy Hill Rd
404-952-0200

IL Lombard
Comten Inc
477 E Butterfield Rd
312-969-9100

MD Rockville
Comten Inc
3 Choke Cherry Rd
301-948-8000

MA Waltham
Comten Inc
400 Totten Pond Rd
617-890-1414

MI Southfield
Comten Inc
20100 Civic Center Dr
313-353-3660

MO St Louis
Comten Inc
2388 Schuetz Rd
314-569-3020

NJ Medford
Comten Inc
Tauton Blvd
609-654-5133

NY New York City
Comten Inc
300 E 42 St
212-599-4450

NY Elmsford
Comten Inc
33 W Tarrytown Rd
914-592-5709

OH Columbus
Comten Inc
1630 NW Professional Plaza
614-457-5870

OH Cincinnati
Comten Inc
415 Glenspring Dr
513-851-5500

PA Bal Cynwyd
Comten Inc
1 Bala Cynwyd Plaza
215-667-1065

PA Pittsburgh
Comten Inc
Two Oliver Plaza
412-391-8270

TX Dallas
Comten Inc
13601 Preston Rd
214-233-7000

TX Houston
Comten Inc
4151 SW Freeway
713-961-4111

WA Bellevue
Comten Inc
10655 NE 4 Ave
206-454-5072

ONTARIO, CANADA
Toronto
Comten Inc
505 Consumers Rd
416-496-1300

If you know the name of the product, you can find out who makes it in the **Products & Services Directory, page 5.**

CONCORD CONSULTING GROUP
191 Sudbury Rd
Concord, MA 01742
617-369-8744
Contact: Michael J Lydon
■ Products & Services
Data communications consultants

CONTINENTAL RESOURCES INC
175 Middlesex Turnpike
Bedford, MA 01730
617-275-0850
Contact: James McCann
■ Products & Services
Acoustic couplers
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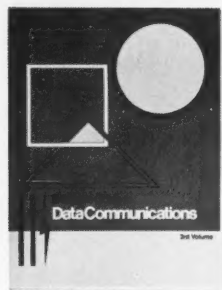
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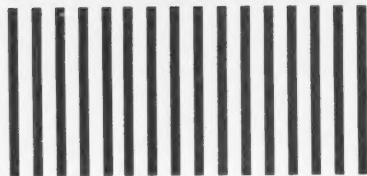
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THE DATA COMM CO

3000 Directors Row
Memphis, TN 38131
901-345-3544
■ Products & Services
Value-added carriers

DATA COMMUNICATIONS CORP

3000 Directors Row
Memphis, TN 38131
901-345-3544
Contact: Ruth A Racely
■ Products & Services
Packet-switching carriers
Concentrators
Front-end processors
Minicomputers
Remote network processors
DDP systems
Cartridge drives
Cassette drives
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Interactive systems
Remote line printers
Remote job entry terminals
Video data terminals (KSR)
Paper for terminals
Ribbons and supplies for terminals and printers
Data communications consultants
Data com. softw, distr. dp systems vend.

Branch Sales Offices:

NY New York
Datronics
41 E 42 St
212-867-0800
NY Buffalo
Collective Computer Mktg
3360 Harlem Rd
716-835-7700
NY Long Island
Data Communications Corp
2001 Marcus Ave
OK Oklahoma City
Janus Corp
1425 NW 37 St
405-528-5444
WA Bellevue
CDI
1309 114 SE
206-455-5117
AUSTRALIA
Sydney
Greater Pacific Computing
55 Lavender St
612-922-1722
ENGLAND
London
DCCI
5 Church St, Middlesex
01-892-3685

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

DATA CONTROL SYSTEMS DIV OF GENERAL INDICATOR CORP

PO Box 860
Danbury, CT 06810
203-743-9241
Contact: L Manz
■ Products & Services
Line drivers
Modems, limited distance
Protocol analyzers
Modem eliminators
Select. & transfer equip., monitor & test switch. equip.

Branch Sales Offices:

AL Huntsville
Gentry Assoc
2109 W Clinton Ave
205-534-9771

AZ Phoenix
Data Systems Marketing
357 East Thomas Rd
602-265-5216

CA Irvine
Data Systems Marketing
17941 Sky Park Circle Dr
714-540-2312

CO Denver
Data Systems Marketing
1155 Speer Blvd
303-573-5133

FL Orlando
Gentry Assoc
550 N Bumby Ave
305-894-4401

GA Atlanta
Gentry Assoc
16 Perimeter Park Dr
404-455-1206

IL Des Plaines
Lincoln Hodges & Assoc
3158 Des Plaines Ave
312-297-3810

LA Gretna
Gentry Assoc
1799 Stumpf Blvd
504-367-3975

MD Laytonsville
GT Assoc
6501 Griffith Rd
301-949-8060

MN Burnsville
Jaynus Assoc
210 W Burnsville Pkwy
612-890-7860

MO Independence
Engineering Services Comp
2425 S Cryslar
816-254-3600

NM Albuquerque
Data Systems Marketing
17901 Menaul Blvd NE
505-294-5790

NC Burlington
Gentry Assoc
428 Alamance Rd
919-227-3639

OR Hillsboro
Data Systems Marketing
910 NW Brookwood
503-640-4883

UT Salt Lake
Data Systems Marketing
1864 S State St
801-487-8281

WA Kirkland
Data Systems Marketing
137-1/2 Commercial Ave
206-827-0402

AUSTRALIA

Balwyn, Victoria
Dindima Group
Box 113

ENGLAND

Middlesex
Data Communications
Division/Aeradio House
Hayes Rd Southall
01-574-2411

ISRAEL

Bene Baraq
AEL Israel Ltd
7 Jabotinsky St
70411

JAPAN

Tokyo
Chisho Corp
1-8-17 Yaesu Chuo-Ko
03-272-3321

DATA DIMENSIONS INC

99 River Rd
Cos Cob, CT 06807
203-622-0500
Contact: Lester Gottlieb
■ Products & Services
Minicomputers
Multiplexers, frequency division
Multiplexers, time division
Acoustic couplers
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Batch terminals
Graphic display terminals
Intelligent (programmable) terminals
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Video data terminals (KSR)
Video data terminals (RO)
Data access arrangement devices
Modem eliminators
Data communications consultants
Data com. softw, distr. dp systems vend.
Data com. softw, intel. term. vendors
Lease and resale organizations
Maintenance organizations
Used equipment

Branch Sales Offices:

CA Encino
Data Dimensions Inc
15760 Ventura Blvd
213-990-9200

CA San Mateo
Data Dimensions Inc
1670 S Amphlett Blvd
415-349-7262

DC Washington
Data Dimensions Inc
4900 Massachusetts Av NW
202-686-5150

GA Atlanta
Data Dimensions Inc
2580 Cumberland Pkwy
404-433-2023

IL Glen Ellyn
Data Dimensions Inc
800 Roosevelt Rd
312-858-3770

MI Southfield
Data Dimensions Inc
19400 W Ten Mile Rd
313-358-2600

NE Creve Coeur
Data Dimensions Inc
Creve Coeur Exec Office Pk
314-432-6121

NJ Secaucus
Ledgermatic Inc
135 Seaview Dr
201-350-9500

NJ Denville
Data Dimensions Inc
777 Craig Rd
201-625-5880

NY New York
Data Dimensions Inc
60 E 42 St
212-687-2030

OH Cincinnati
Data Dimensions Inc
4000 Executive Park Dr
513-769-0680

PA Cherry Hill, NJ
Data Dimensions Inc
811 Church Rd
609-662-2833

TX Dallas
Data Dimensions Inc
4825 LBJ Frwy
214-387-2222

TX Houston
Data Dimensions Inc
4550 Post Oak Place Dr
713-961-4711

DATA ELECTRONICS INC

11633 Sorrento Valley Rd
San Diego, CA 92121
714-481-0151

Contact: Sam Thompson
■ Products & Services
Cartridges
Cartridge drives
Tape drives, magnetic

Branch Sales Offices:

AZ Phoenix
Thorson Desert States Inc
2505 E Thomas Rd
602-956-5300

CA Irvine
Data Electronics Inc
19752 MacArthur Blvd
714-752-0659

CA Sunnyvale
Data Electronics Inc
510 Lawrence Exprwy
408-739-7882

CA San Diego
Gemini Assoc
4236 Balboa Ave
714-270-0088

CA Alhambra
The Thorson Co
624-A N Garfield Ave
213-281-2280

CA Goleta
The Thorson Co
340 S Kellogg Ave
213-476-1241

CA Irvine
The Thorson Co
18009 Skypark Cir
714-557-4460

CA Los Angeles
The Thorson Co
520 S Sepulveda Blvd
213-476-1241

CO Denver
Thorson Rocky Mountain Inc
7076 S Alton Way
303-779-0666

FL Casselberry
E I R Inc
450 Seminola Blvd
305-830-9600

MD Wheaton
Data Systems Marketing
11141 Georgia Ave
301-933-0900

MA Acton
R D Stout Assoc
75 Great Rd
617-263-1128

MN Chanhassen
Professional Marketing Services
Box 58
612-474-5939

NH Nashua
Data Electronics Inc
125 E Dunstable Rd
603-888-6262

NJ Fort Lee
Technical Marketing Assoc
2460 Lemoine Ave
201-224-6911

PA King of Prussia
Rivco January Inc
Box 338
215-265-5211

TX Dallas
Remtek
13500 Midway Rd
214-387-2855

TX Houston
Remtek
9720 Town Park
713-227-2195

UT Salt Lake City
Thorson Rocky Mountain Inc
3691 West 1987 S
801-973-7969

WA Bellevue
Olson Ferree & Assoc Inc
12727 Notheast 20
206-883-7792

DATA EQUIPMENT INC

238 Caribbean Dr
Sunnyvale, CA 94086
408-734-5610

■ Products & Services
Telephone companies
Acoustic couplers
Modems, voice-grade, low-speed
Add-on main memory
Disc drives, floppy
Discs, floppy
Disc drives, large
Graphic display terminals
Interactive systems
Remote job entry terminals
Teleprinters, impact
Video data terminals (KSR)
Word processors, communicating
Furniture, cabinets, terminal enclosures
Paper for terminals
Ribbons and supplies for terminals and printers
Data com. softw, independ. softw houses
Lease and resale organizations
Maintenance organizations
Used equipment

Branch Sales Offices:

CA San Francisco
Inst of Economic Analysis
44 Montgomery St
415-421-6021

CA Los Angeles
Opextron Business Mach Inc
1625 W Olympic Blvd
213-380-4603

GA Atlanta
Qualterm Terminals
3379 Peachtree Rd
404-237-9242

IL Springfield
Inst for Comp Analysis & Fin
Evaluation
Highland Dr
217-544-5312

MD Gaithersburg
Zeta Corp
1 W Deer Park Dr
301-840-1070

NY New York
Universal Microcommunication Sys
Corp
One World Trade Ctr
212-466-9100

UT Kaysville
Covenant Entrps
907 Stoneybrook Rd
Arlington

VA ORB Information Sys
3800 N Fairfax Dr
703-522-2772

DATA FLO

1301 Cambridge Av
Hopkins, MN 55343
612-433-2166
Contact: Roger B Sather
■ Products & Services
Inverse multiplexers
Multiplexers, intelligent
Data compactor

Branch Sales Offices:

MN Hastings
Data Flo Mktg
122 W 3 St
612-437-2330

For further catalog information, turn to
UpDate Service Card, page 201.

DATA GENERAL CORP

4400 Computer Dr
Westboro, MA 01581
617-366-8911
Advertising pages 37,38
Contact: William J Smith
■ Products & Services

Minicomputers
Packet processors
Remote network processors
DDP systems
Add-on main memory
Cartridges
Cartridge drives
Disc drives, floppy
Disc drives, large
Tape, magnetic
Tape drives, magnetic
Tape, paper
Tape punch/reader, paper
Batch terminals
Intelligent (programmable) terminals
Interactive systems
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Computer/communications interfaces
Ribbons and supplies for terminals and printers
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.
Data com. softw, intel. term. vendors
Maintenance organizations

Branch Sales Offices:

AL Birmingham
Data General Corp
90 Bagby Dr
205-942-3730

AZ Phoenix
Data General Corp
1950 E Watkins
602-254-6412

AZ Tucson
Data General Corp
4633 E Broadway
602-327-6811

AR Little Rock
Data General Corp
6 and McKinley
501-664-7075

CA El Segundo
Data General Corp
2221 Rosecrans Ave
213-973-0401

CA Van Nuys
Data General Corp
7011 Hayvenhurst Ave
213-787-8870

CA Santa Barbara
Data General Corp
5266 Hollister Ave
805-967-5544

CA Santa Ana
Data General Corp
1220 Village Way
714-558-9421

CA San Diego
Data General Corp
4305 Gesner St
714-276-8450

CA Palo Alto
Data General Corp
2445 Faber Pl
415-321-8010

CA Fresno
Data General Corp
5108 E Clinton Way
209-251-5027

CA San Francisco
Data General Corp
120 Howard St
415-543-6730

CA Sacramento
Data General Corp
4031 North Freeway Blvd
916-920-3434

CO Englewood
Data General Corp
8455 E Prentice Ave
303-773-2620

CT Bradford
Data General Corp
50 Shaw Rd
203-484-2771

FL Orlando
Data General Corp
6880 Lake Ellenor Dr
305-851-8230

FL Ft Lauderdale
Data General Corp
1001 NW 62 St
305-771-0784

FL Tampa
Data General Corp
5444 Bay Center Dr
813-879-2515

GA Atlanta
Data General Corp
1639 Tullie Circle
404-325-3181

GA Norcross
Data General Corp
6855 Jimmy Carter Blvd
404-448-6072

ID Boise
Data General Corp
130 South Cole Rd
208-375-6510

IL	Schaumburg Data General Corp 1111 Plaza Dr 312-885-0505	NY	Liverpool Data General Corp 290 Elwood David Rd 315-451-5440	TX	Dallas Data General Corp 4450 Sigma Rd 214-233-4496
IL	Peoria Data General Corp 2524 W Farrelly Ave; SW of Rt 150 & Glen 309-688-2224	NY	Buffalo Data General Corp 3527 Harlem Rd 716-835-3710	TX	Ft Worth Data General Corp 5608 Malvey Ave 817-732-6441
IN	Indianapolis Data General Corp 2421 Production Dr 317-248-8306	NY	Latham Data General Corp 12 Avis Dr 518-783-3101	TX	Houston Data General Corp 4949 W 34 St 713-688-8641
KY	Louisville Data General Corp 4229 Bardstown Rd 502-491-6595	NY	Melville Data General Corp 150 Broad Hollow Rd 516-427-0311	TX	Austin Data General Corp 111 W Anderson La 512-458-4201
LA	Baton Rouge Data General Corp 8211 Goodwood Blvd 504-923-0660	NY	White Plains Data General Corp 6 Corporate Park Dr 944-694-1410	UT	Salt Lake City Data General Corp 3644 W 2100 S 801-972-1338
MD	Baltimore Data General Corp 1900 Sulphur Spring Rd 301-247-8900	NC	Greensboro Data General Corp 405 Parkway Dr 919-378-9401	VA	McLean Data General Corp 1757 Old Meadow Rd 703-827-9600
MA	Wellesley Data General Corp 888 Worcester Rd 617-235-8171	NC	Charlotte Data General Corp 5950 Fairview Rd 704-554-8600	VA	Richmond Data General Corp 5001 W Broad St 804-288-1675
MA	Worcester Data General Corp Mechanics Bank Tower 617-754-3096	OH	Brooklyn Heights Data General Corp 709 Brookpark Rd 216-459-2300	VA	Norfolk Data General Corp 5 Koger Exec Center 804-461-0933
MI	Southfield Data General Corp 16900 W Eight Mile Rd 313-569-0200	OH	Dayton Data General Corp 1161 Lyons Rd 513-435-1932	VA	Salem Data General Corp 417 Apersen Rd 703-389-8155
MN	Richfield Data General Corp 1600 E 78th St 612-866-3005	OH	Columbus Data General Corp 6161 Busch Blvd 614-436-0951	WA	Kirkland Data General Corp 10604 NE 38 Pl 206-827-0503
MO	Kansas City Data General Corp 4520 Madison Ave 816-531-1326	OK	Oklahoma City Data General Corp 6161 N May Ave 409-840-3891	WV	Charleston Data General Corp 723 Kanawha Blvd E
MO	St Louis Data General Corp 11854 Lackland Rd 314-567-4820	OK	Tulsa Data General Corp 9726 East 42 S 918-664-8530	WI	West Allis Data General Corp 10533 W National Ave; Suite 300 414-327-6811
MT	Billings Data General Corp 17 Roundup Dr 406-652-1782	OR	Portland Data General Corp 4614 SW Kelly 503-223-7150	ALBERTA, CANADA	Calgary Data General Corp 6325 12 St SE 403-253-8427
NE	Omaha Data General Corp 7000 W Center Rd 402-392-2521	PA	Blue Bell Data General Corp 1777 Walton Rd 215-643-5515	ALBERTA, CANADA	Edmonton Data General Corp 124 St 403-482-3443
NV	Las Vegas Data General Corp 3355 Spring Mtn Rd 702-876-0663	PA	Carnegie Data General Corp 600 Bell Ave 412-279-3500	BRITISH COLUMBIA, CANADA	Richmond Data General Corp 10250 Shellbridge Way 604-273-2711
NH	Nashua Data General Corp 491 Amherst St 603-889-8524	RI	Rumford Data General Corp 225 Newman Ave 401-438-0001	ONTARIO, CANADA	Toronto Data General Corp 415 Horner Ave 416-259-4271
NJ	Wayne Data General Corp 30 Galesi Dr 201-785-3910	SC	Columbia Data General Corp 240 Stoneridge Dr 803-798-6510	ONTARIO, CANADA	Ottawa Data General Corp 210 Gladstone Ave 613-563-1121
NY	New York Data General Corp 144 E 44 St 212-557-1122	TN	Memphis Data General Corp 1355 Lynnfield Rd 909-761-3366	QUEBEC, CANADA	Ville St Laurent Data General Corp 438 Isabey 514-342-5730
NY	Rochester Data General Corp 625 Panorama Trail 716-385-2000	TN	Knoxville Data General Corp 1515 E Magnolia Ave 615-524-1841		
NY	Newfield Data General Corp L141 Meadowbrook Ct 607-272-9440	TX	El Paso Data General Corp 1605 Beech Pl 915-778-6601		

AUSTRALIA
Melbourne, Victoria
Data General Australian Pty Ltd
30-32 Ellingworth Parade
03-890633

AUSTRIA
Wien
Data General Gesellschaft MBH
Ferkorngasse 2
222-62-61-46

BELGIUM
Brussels
NV Data General SA
Blvd du Souverain 191-197
02-660-49-44

BRAZIL
Sao Paulo
Data General Ltda
Rua Georgia 221
543-0138

DENMARK
Copenhagen
Data General A/S
Sjaellandsboen 2
1-30-56-66

ENGLAND
Greenford, Middlesex
Data General Ltd
320 Ruislip Road East
1-578-9231

FRANCE
Paris
Data General Europe
61 Rue de Courcelles
766-51-78

FRANCE
Le Plessis Robinson
Data General France
La Boursiere, Immeuble M BP
78; R. Nationale 186
1-630-21-05

GERMANY, WEST
Eschborn
Data General GMBH
Frankfurter Allee 27
06196

GREECE
Athens
Data General Greece
260 Syngrou Ave
952-0557

ITALY
Milan
Data General SPA
Det Gracchi 36; 20092 Ciniselo,
Balsamo
38-2-61-88

NETHERLANDS
Rijswijk
Data General Holland BV
Van Gijnstraat 17
70-907-694

SWEDEN
Stockholm
Data General Sweden AB
Industrivagen 20; 48 Solna
8-83-44-00

SWITZERLAND
Zurich
Data General AG
Neugasse 247
41-1-44-03-55

DATAGRAPHIX INC
Box 82449
San Diego, CA 92138
714-291-9960
Contact: W M Cartwright
■ Products & Services
Disc drives, large
Tape drives, magnetic

Interactive systems
Microfilm equipment, systems and services
Branch Sales Offices:

CA Los Angeles
DatagraphiX Inc
2934 Wilshire Blvd
213-828-5621

CA Oakland
DatagraphiX Inc
8477 Enterprise Way
415-562-9074

GA Atlanta
DatagraphiX Inc
2400 Perimeter Center E
404-394-4814

IL Hinsdale
DatagraphiX Inc
15 Spinning Wheel Rd
312-325-4310

MD Bethesda
DatagraphiX Inc
7315 Wisconsin Ave
301-654-5228

MA Waltham
DatagraphiX Inc
395 Totter Pond Rd
617-890-6990

MN Bloomington
DatagraphiX Inc
2850 Metro Dr
612-854-2984

NY New York
DatagraphiX Inc
One Rockefeller Plaza
212-765-4930

OH Rocky River
DatagraphiX Inc
20950 Center Ridge Rd
216-333-5311

TX Dallas
DatagraphiX Inc
4240 Sigma Rd
214-386-7003

BELGIUM
Bruxelles
DatagraphiX SA
Avenue Lloyd George 7
640-1616

ENGLAND
Maidenhead
DatagraphiX Int'l Support
Shoppenhangers Rd
Maidenhead 32255

ENGLAND
Windsor
DatagraphiX Ltd
Drift Rd
Std 03447

FRANCE
Paris
DatagraphiX SARL
72-74 Quai de la Loire
1-200-22-22

GERMANY, WEST
Wiesbaden
DatagraphiX GmbH
Abraham Lincolnstrasse 28
700085

For further catalog information, turn to **UpDate Service Card, page 201.**

DATA GROUP
2605 South West Temple
Salt Lake City, UT 84115
801-484-2183
Contact: Mike Wise
■ Products & Services
Teleprinters, impact

DATAMEDIA CORP
7300 N Crescent Blvd
Pennsauken, NJ 08110
609-665-2382
Contact: Robert Sullivan
■ Products & Services
DDP systems
Data entry terminals, portable
Intelligent (programmable) terminals
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:
CA Los Angeles
Datamedia Corp
5456 McConnell Av
213-397-3556

MD Gaithersburg
Datamedia Corp
19516 Clubhouse Rd
301-948-1670

MA Wellesley
Datamedia Corp
148 Linden St
617-235-5028

MN Arden Hills
Datamedia Corp
3585 Lexington Ave N
612-483-0858

NY Pennsauken
Datamedia Corp
7300 N Crescent Blvd
609-665-2382

TX Houston
Datamedia Corp
4801 Woodway Dr
713-871-0320

DATAMETRICS CORP
7630 Gloria Ave
Van Nuys, CA 91406
213-989-3840
Contact: Doug Shute
■ Products & Services
Digital plotters
Remote line printers
Teleprinters, non-impact
Paper for terminals

Branch Sales Offices:
MN Wayzata
Dorwart Peripherals
2700 Urbandale Way
612-473-9242

NY Ft Solanga
Data Logic Sales
16 Juliet La
516-757-3330

VA Falls Church
Negley Assoc
210 E Fairfax St
703-560-7920

GERMANY, WEST
Munich
Technitron GmbH
Martin Luther Strabe 20

DATA PLUS INC
5500 Port Royal Rd
Springfield, VA 22151
703-321-7914
Contact: Scott W Buell
■ Products & Services
Terminal controllers
Modem eliminators
Protocol converters
Switches, data communications, automatic

DATAPoint CORP

9725 Datapoint Dr
San Antonio, TX 78284

512-699-7151

Advertising page 107

Contact: Gerry Cullen

■ Products & Services

DDP systems

Cartridges

Cartridge drives

Cassettes

Cassette drives

Disc drives, floppy

Disc drives, large

Tape, magnetic

Tape drives, magnetic

Batch terminals

Intelligent (programmable) terminals

Interactive systems

Remote line printers

Remote job entry terminals

Video data terminals (KSR)

Video data terminals (RO)

Word processors, communicating

Automatic answering units

Automatic calling units

Computer/communications interfaces

Protocol converters

Switches, data communications, automatic

Data com. softw, distr. dp systems vend.

Branch Sales Offices:

AZ Phoenix
Datapoint Corp
602-273-6223

CA Irvine
Datapoint Corp
714-752-9073

CA Los Angeles
Datapoint Corp
213-385-0395

CA San Francisco
Datapoint Corp
415-398-2888

CA Oakland
Datapoint Corp
415-562-5612

CA Sacramento
Datapoint Corp
916-920-8743

CO Denver
Datapoint Corp
303-321-8286

CT East Hartford
Datapoint Corp
203-289-9364

CT Stamford
Datapoint Corp
203-359-4175

DC Washington
Datapoint Corp
703-841-7600

FL Miami
Datapoint Corp
305-621-4335

FL Orlando
Datapoint Corp
305-896-1940

FL Tampa
Datapoint Corp
813-879-8216

FL Jacksonville
Datapoint Corp
904-264-6935

GA Atlanta
Datapoint Corp
404-325-2212

HI Honolulu
Datapoint Corp
808-833-2110

IL Chicago
Datapoint Corp
312-298-1240

IL Des Plaines
Datapoint Corp
312-977-1470

IN Indianapolis
Datapoint Corp
317-299-4253

IA Des Moines
Datapoint Corp
515-225-9070

KY Louisville
Datapoint Corp
502-893-2531

LA New Orleans
Datapoint Corp
504-831-8101

MA Boston
Datapoint Corp
617-890-0440

MI Detroit
Datapoint Corp
313-855-2900

MN Minneapolis
Datapoint Corp
612-854-4054

MO Kansas City
Datapoint Corp
816-474-2160

MO St Louis
Datapoint Corp
314-878-6595

NJ New Jersey
Datapoint Corp
201-368-0070

NY Albany
Datapoint Corp
518-459-7781

NY New York
Datapoint Corp
212-971-9270

NY Rochester
Datapoint Corp
716-248-2616

NC Charlotte
Datapoint Corp
704-527-5300

NC Greensboro
Datapoint Corp
919-299-8401

OH Cincinnati
Datapoint Corp
513-984-5057

OH Cleveland
Datapoint Corp
216-351-1775

OH Columbus
Datapoint Corp
614-890-7686

OH Toledo
Datapoint Corp
419-474-5766

OK Oklahoma City
Datapoint Corp
405-942-8714

OK Tulsa
Datapoint Corp
918-664-2295

OR Portland
Datapoint Corp
503-644-5575

PA Philadelphia
Datapoint Corp
215-667-9477

PA Pittsburgh
Datapoint Corp
412-788-4440

SC Charleston
Datapoint Corp
803-571-1653

TN Memphis
Datapoint Corp
901-761-3080

TN Nashville
Datapoint Corp
615-361-5981

TX Dallas
Datapoint Corp
214-661-5536

TX Houston
Datapoint Corp
713-680-2200

TX San Antonio
Datapoint Corp
512-734-8982

TX Ft Worth
Datapoint Corp
817-457-9050

UT Salt Lake City
Datapoint Corp
801-262-2915

VA Richmond
Datapoint Corp
804-285-8611

WA Seattle
Datapoint Corp
206-455-2044

WI Milwaukee
Datapoint Corp
414-453-1425

ONTARIO, CANADA
Ontario

TRW Data Systems
416-491-9606

AUSTRALIA

Sidney
Sigma Data Corporation
02-922-3100

AUSTRIA

Vienna
SCANIPS
0222-21-41

BELGIUM

Brussels
SAIT Electronics
02-376-2030

DENMARK

Copenhagen
A/S Regnecentralen
01-105366

FINLAND

Helsinki
Oy Nokia
90-661991

FRANCE

Paris
MATRA Informatique
01-657-13-31

GERMANY, WEST

Hannover
GIER Electronics
0511-67971

GREECE

Piraeus
CHERMA Electronics
1-4123471

ISRAEL

Tel Aviv
IS Information Systems
03-228174

ITALY

Milan
ENCODEx
02-316-333

JAPAN

Tokyo
CJK Co. Ltd
3-264-6131

NETHERLANDS
Rotterdam
RC Regnecentralen
10-216244

NORWAY
Oslo
A/S SCANIPS
02-35780

SPAIN
Madrid
Senercaya
1-242-3905

SWEDEN
Hagersten
Nokia AB Elektronik
8-188295

SWITZERLAND
Zurich
TRW International
01-545646

DATA PRINTER CORP
90 Middlesex St
Malden, MA 02148
617-321-2400
Contact: Joseph Dube
■ Products & Services
Batch terminals
Remote line printers
Branch Sales Offices:
CA Santa Ana
Data Printer Corp
3877 S Main St
714-557-6582
CA Sunnyvale
Data Printer Corp
1225 Tiros Way
408-739-4310
MA Melrose
Data Printer Corp
141 Pleasant St
617-662-2166
MN Bloomington
Data Printer Corp
9001 E Bloomington Frwy
612-884-2422
NJ Clifton
Data Printer Corp
Box 578
201-777-0135
TX Dallas
The Thorson Company
4445 Alpha Rd
214-233-5744

DATA PROCESSING POWER
12638 Beatrice St
Los Angeles, CA 90066
213-390-8931
■ Products & Services
Power supplies, uninterruptible; line correctors, etc.
Branch Sales Offices:
CA Los Angeles
Computer Facilities Service Grp
12638 Beatrice St
213-390-8939
CA San Mateo
CAP
331 Aragon Blvd
415-342-6974
CA Rancho Cordova
Cal-Mod
11505 Douglas Rd
916-351-0745
CO Denver
Price Business Interiors
755 S Federal
303-922-3638

IL Lockport
Computer Facilities Services
Grp/Chicago
571 Roseann
815-838-3395
MI Lansing
Data Supplies Company
320 N Washington
517-484-0912
MO St Louis
Conner Universal
8218 Exchange Way
314-962-7737
NH Nashua
Power Conversion Sys
92 Main St
603-889-8262
NJ Cherry Hill
Avant Garde Computing
26 Olney Ave
609-424-9620
NM Albuquerque
Stu Daigneau
16 Casa Hermosa NE
505-292-1022
OR Portland
Oregon Data Products
2828 SW Corbett
503-223-3232
TX Richardson
Data Processing Power
862 W Spring Valley Rd
214-699-9843
TX Richardson
Barry Sales
709 Lingco
214-234-0255
TX Houston
System Technology Assoc
17111 Rolling Creek Dr
713-440-8340
VA Annandale
Government Sales Inc
7023 Little River Tnpk
703-354-4065
WA Issaquah
Data Processing Power
19818 SE 23 St
206-392-2161
WI Milwaukee
The Christofferson Co
7469 N Lombardy
414-351-2090

DATAPRODUCTS CORPORATION
6200 Canoga Ave
Woodland Hills, CA 91367
213-887-8451
Contact: Leo McGarry
■ Products & Services
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Word recognition units
Word processors, communicating
Branch Sales Offices:
CA Irvine
Dataproducts
19772 MacArthur Blvd
714-752-7411
CA Santa Clara
Dataproducts
3301 Olcott St
408-249-9900
CA Irvine
Dataproducts
7426 Daimler Ave
714-540-9945

CA Chatsworth
Dataproducts
20327 Nordhoff St
213-882-0530
CT Wallingford
Dataproducts
Barnes Park N
203-265-7151
FL Coral Springs
Dataproducts
3300 University Dr
305-753-1040
MA Wellesley Hills
Dataproducts
36 Washington St
617-237-4711
MI Rochester
Dataproducts
155 Romero Rd
313-652-1134
MN Minneapolis
Dataproducts
4940 Viking Dr
612-835-2066
PA Wayne
Dataproducts
999 Old Eagle School Rd
215-293-1810
TX Richardson
Dataproducts
777 S Central Expwy
214-231-2240
VA Arlington
Dataproducts
2341 Jefferson Davis Hwy
703-479-8822
EIRE (IRELAND)
Dublin
Dataproducts Ltd
Greencastle Rd Coolock
311-666
GERMANY, WEST
Frankfurt
Dataproducts Int'l
Darmstaedter Landstrasse 199
68-20-01
HONG KONG
Kwun Tong, Kowloon
Dataproducts Ltd
95 How-Ming St
430-231

DATARAM CORP
Princeton-Hightstown Rd
Cranbury, NJ 08512
609-799-0071
Contact: J Gilligan
■ Products & Services
Add-on main memory
Branch Sales Offices:
AL Hunstville
Col-Ins-Co
Box 4028
205-881-9512
AZ Phoenix
Thorson Desert States
2505 E Thomas Rd
602-956-5300
CA Fountain Valley
MQI Computer Products
18381 Bandilier Cr
714-964-4722
CA Mountain View
Thorson W
625 Ellis St
415-964-9300
FL Orlando
Col-Ins-Co
Box 13189
305-423-7615

FL Coral Springs
Col-Ins-Co
Box C-7
305-753-1338

FL St Petersburg
Col-Ins-Co
Box 10729
813-823-7082

GA Clarkston
Col-Ins-Co
Box 559
404-299-2138

IL North Brook
Marketch
3677 Woodhead Dr
312-729-8031

LA Baton Rouge
Col-Ins-Co
5014 Park Hollow Dr
504-292-1755

MD Gaithersburg
Technical Sales Assoc
19544 Club House Rd
301-258-9790

NJ Ft Lee
Technical Sales Assoc
2460 Lemoine Av
201-224-6911

NJ Haddonfield
Williams Associates
805 Hopkins Rd
609-428-6060

NM Albuquerque
Thorson Desert States
1101 Cardenas NE
505-265-5655

NY Rochester
RG Engineering
3100 Monroe Av
716-385-3021

NC Winston-Salem
Col-Ins-Co
Box 11607
919-748-0297

TX Houston
Thorson SW
6633 Hillcroft
713-771-3504

TX Dallas
Thorson SW
4445 Alpha Rd
214-233-5744

TX Austin
The Thorson Co
300 E Huntland Dr
512-451-7527

ONTARIO, CANADA
Rexdale Ont
Ahearn & Soper Ltd
31 Enterprise Rd
416-245-4848

AUSTRALIA
Victoria
Anderson Digital Equip
1 Expo Ct
03-543-2077

ENGLAND
Reading
Sintrom Ellinor Ltd
14 Arkwright Rd
0734-85464

FINLAND
Helsinki
Systek Oy
Aleksis Kiven Katu 3
09-737-233

FRANCE
B P 40-78530 Buc
YREL
Z I Rue Fourny
956-81-42

GERMANY, WEST
Leinfelderstrasse
OEM-Elektronik GmbH
7023 Echterdingen
07-11-79

INDIA
Ahmedabad
Industrial Electronic Inst
30 NBK Society, Ellis-Bridge
79281

ISRAEL
Tel Aviv
K D M Electronics
14 Karlbach St
03-266291

ITALY
Milano
Mactronics Italia
Via Le Jenner 38/40
02-6882141

JAPAN
Tokyo
Matsushita Elec Trading Co Ltd
4-1, 2-Chome, Hamamatsu-cho;
Minato-Ku
03-435-4501

JAPAN
Osaka
Matsushita Elec Trading Co Ltd
Box 288
06-204-5111

NETHERLANDS
Schiphol Ap East
Technitron bv
Bldg 70 Box 7542
020-458755

SWEDEN
Vallingby
M Stenhardt AB
Box 331
08-739-00-50

SWITZERLAND
Schlieren
ADCOMP AG
Steinwiesenstrasse 3
01/730-48-48

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

DATA RENTALS/SALES INC
8611 Hayden Pl
Culver City, CA 90230
213-559-3822
Contact: Stewart M Krakover
■ Products & Services
Acoustic couplers
Batch terminals
Data entry terminals, portable
Intelligent (programmable) terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Lease and resale organizations
Used equipment

Branch Sales Offices:

CA Redwood City
Data Rentals/Sales Inc
2603 Middlefield Rd
415-364-4384

FL Tarpon Springs
Data Rentals/Sales Inc
711B Klosterman Rd
813-934-0829

DATAROYAL
235 Main Dunstable Rd
Nashua, NH 03061
603-883-4157
Contact: Ronald O Huch
■ Products & Services
Intelligent (programmable) terminals
Interactive systems
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teletypewriters
Word recognition units
Word processors, communicating

Branch Sales Offices:

FL Orlando
W A Brown Instruments
Box 513
305-425-5505

IL Chicago
Data Electronics Co
4976 N Milwaukee Av
312-283-0300

MA Instrument Dynamics
Lakeside Office Park
617-245-5100

MI Brighton
Lowry Assoc
135 W North St
313-227-7067

NJ Fort Lee
TMA
2460 Lemoine Av
201-224-6911

NY North Syracuse
NACO
Box 276
315-699-2651

NY New York
Kanematsu-Gosho
One World Trade Center

PA King of Prussia
J E Cuesta & Co
570 W DeKalb Pike
215-265-5800

TX Dallas
The Thorson Co
4445 Alpha Rd
214-233-5744

AUSTRALIA
Sydney
System One Pty Ltd
255 Pitt St

SWEDEN
Stockholm
Facit Data Products
S-105 45
011-46-8738-7330

DATA SET CABLE CO INC
722 Danbury Rd
Ridgefield, CT 06877
203-438-9684
Contact: George Catha
■ Products & Services
Line drivers
Modems, limited distance
EIA cable testers
Tech control centers
Cables, electrical prefabricated extender
Modem eliminators
Select. & transfer equip., monitor & test
switch. equip.
Switches, data communications, manual

Branch Sales Offices:

FL Orlando
FM Assoc
Box 13705
305-851-5710

MD Silver Spring
Carwithen Assoc
1400 Spring St
301-589-9040

NV Las Vegas
Data Set Cable Co
3560 Polaris Av
702-873-2133

NJ Ridgewood
Instrumentation Sales Co
Box 403

NY New York
Glasgal Comm Service
521 Fifth Av
212-687-2455

NY Great Neck
Harvey J Krasner Assoc
33 Great Neck Rd
516-487-0690

TX Dallas
Computer Assoc
8383 Stemmons
214-634-1320

ONTARIO, CANADA
Markham
Signatel Ltd
89 Telson Rd
416-495-9229

DATA SPECIALTIES INC
3455 Commercial Av
Northbrook, IL 60062
312-564-1800
Contact: Edward Kaplan
■ Products & Services
Tape, paper
Tape punch/reader, paper
Protocol converters

Branch Sales Offices:

AL Huntsville
Data Specialties Inc
2809 Triana Blvd SW
205-536-6666

CA Santa Clara
Basic Systems Corp
2359 Pela Cruz
408-727-1800

CA Inglewood
Basic Systems Corp
230 W Florence Av
213-673-4300

CA San Diego
Basic Systems Corp
7152 Convey Ct
714-279-9641

FL Orlando
Data Specialties Inc
2545 Ind Blvd
305-293-5202

FL Boca Raton
Data Specialties Inc
4190 NW Oak Cir
305-368-9194

IL Arlington Heights
Dytec/Central
315 W University Dr
312-394-3380

IN Indianapolis
Dytec/Central
25 Beachway Dr
317-247-1316

IA Iowa City
Dytec/Central
Box 2148
319-683-2282

MD Towson
Scientific Assoc Inc
8 Witherwood
301-321-1411

MI Madison Hts
WKM Associates
345 W Girard
313-588-2300

NJ Wayne
GNA Sales
30 Galesi Dr
201-256-8500

NJ Cherry Hill
Scientific Representatives
496 N Kings Hwy
609-482-0059

NY Roslyn Hts
Travco
142 Mineola Av
516-621-3223

NY Rochester
RG Engineering
3100 Monroe Av
716-385-3021

NY Selkirk
RG Engineering
6 Sherbrook Dr
518-439-3070

NC Charlotte
James L. Highsmith
3733 Monroe Rd
704-333-7743

OH Cleveland
WKM Assoc
16141 Puritas Av
216-267-0445

OH Dayton
WKM Assoc
7913 S Suburban Rd
513-434-7500

PA Pittsburgh
WKM Assoc
90 Clairton Blvd
412-892-2953

TX Dallas
Salcor
13771 N Central Expwy
214-234-8072

TX Houston
Salcor Inc
1199 Nasa Rd

VA Richmond
Data Specialties Inc
2604-D Buford Rd
804-272-5838

VA Falls Church
Scientific Assoc Inc
2990 Telstar Ct
703-573-8787

WI Brookfield
Pivan Engineering
3055 N Brookfield
414-786-1940

DATA STREAM
430 Valley Dr
Brisbane, CA 94005
415-468-3310
Contact: Edward L. Boswell
■ Products & Services
Front-end processors
Minicomputers
Modem sharing units
Multiplexers, intelligent
Remote network processors
DDP systems
Code converters
Protocol converters
Data communications consultants
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.
Data com. softw, independ. softw houses

Branch Sales Offices:
CA Bris Bane
Data Stream Communications Inc
430 Valley Dr
415-468-3310

DATA TERMINALS & COMMUNICATIONS
590 Division St
Campbell, CA 95008
408-378-1112
Contact: Michael Moon
■ Products & Services
Acoustic couplers
DDP systems
Cartridges
Cartridge drives
Disc drives, floppy
Disc drives, large
Intelligent (programmable) terminals
Remote job entry terminals
Teleprinters, impact
Video data terminals (KSR)
Word processors, communicating
Automatic answering units
Automatic calling units

Branch Sales Offices:
CA San Diego
Data Terminals & Communications
344 G St
714-435-2866

DC Silver Spring
Data Terminals & Communications
2600 Pittman Dr
301-589-5570

If you know the name of the product, you can find out who makes it in the **Products & Services Directory, page 5.**

DATATROL INC
Kane Industrial Dr
Hudson, MA 01749
617-568-1411
Contact: Donald L Hill
■ Products & Services
Concentrators
Intelligent (programmable) terminals
Interactive systems
Terminal controllers
Data com. softw, distr. dp systems vend.
Data com. softw, intel. term. vendors

Branch Sales Offices:

FL Altamonte Springs
Datatrol Inc
159 Whooping Loop
305-834-0760

NY Roslyn
Datatrol Inc
6 Middle Neck Rd
516-365-7284

RI Providence
Datatrol Inc
101 Dyer St
401-273-7700

TX Plano
Datatrol Inc
520 Central Pkwy
214-422-5933

DATTEC INC
300 E Main St
Carrboro, NC 27510
919-929-2135
Contact: Attn: VP Mktg
■ Products & Services
Acoustic couplers
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed

Branch Sales Offices:

CA Santa Barbara
Dataquip Corp
Box 3337
805-687-2111

CO Englewood
Barnhill Three Inc
7076 S Alton Way
303-779-3600

GA Norcross
Atlanta Minicomputer
150 Technology Park
404-448-0900

GA Atlanta
Ethom Assoc
3445 Peachtree Rd NE
404-231-2396

MA Danvers
J Melanson & Assoc
39 Pine St
617-774-1220

NJ Bellmawr
Applied Delta Systems Inc
101 Kor Center E
609-931-3100

NJ Wharton
ADL Entrps
Richard Mine Rd
201-328-1300

NY Herkimer
Annese & Assoc Inc
Box 127
315-895-7469

NY Jericho
Electro Rep Inc
366 N Broadway
516-938-0540

NC Charlotte
GLS Inc
6140 Sharon Rd
704-364-5146

OH Rocky River
ARC Electronics
21330 Center Ridge Rd
216-333-8375

PA Pittsburgh
Applied Delta Systems Inc
16 East-West Dr
412-931-1960

VA Newport News
Atlantic Communications
925 48th St
804-627-7600

VA Sterling
Comsel Corp
14 Brookfield Cir
703-525-5889

WI New Berlin
Delta Communications
14640 W Greenfield Av
414-784-3663

DATOTEK INC

13740 Midway Rd
Dallas, TX 75234
214-233-1030
Contact: John Gindling
■ Products & Services
Data security devices, encoder/decoders

Branch Sales Offices:

CA Santa Clara
Talus Inc
3080 Olcott
408-738-4422

CA Encino
King Engineering Co
17333 Rancho St
213-981-8677

FL St Petersburg
Conmark Corp
Box 20023
813-577-0400

MD Bethesda
Warner Assoc Inc
9911 Carter Rd
301-469-8904

NY Great Neck
Harvey J Krasner Assoc Inc
33 Great Neck Rd
516-487-0690

TX Richardson
Carl Tinch Sales Co
First Bank & Trust Co
214-231-1322

ALBERTA, CANADA
Edmonton
Williams Electronics Ltd
11619 147 St
403-455-3858

ONTARIO, CANADA
Markham
Signalnet Ltd
89 Telsen Rd
416-495-9229

ENGLAND
London
Datotek Inc
35 Piccadilly; Airwork House
01-734-8916

DATUM INC

1363 S State College Blvd
Anaheim, CA 92806
714-533-6333
Contact: Ted Lorber
■ Products & Services
Disc drives, large
Tape drives, magnetic

Branch Sales Offices:

CA San Jose
Datum Inc
4100 Moorpark Av
408-249-5370

CO Denver
Datum Inc
10957 E Bethany Dr
303-693-3414

IL Des Plaines
Datum Inc
1001 E Touhy Av
312-296-1064

MA Framingham
Datum Inc
Box 2014
617-872-6911

NJ Mountainside
Datum Inc
615 Sherwood Pkwy
201-654-5590

ENGLAND
Middlesex
Datum House
Cranford Ln, Harlington
01-897-0456

DECISION DATA COMPUTER CORP

100 Witmer Rd
Horsham, PA 19044
215-674-3300
Advertising page 143
Contact: Robert P Young
■ Products & Services
Add-on main memory
Batch terminals
Remote job entry terminals
Teleprinters, impact

Branch Sales Offices:

AL Birmingham
Decision Data Computer Corp
1925 29th Av S

AZ Phoenix
Decision Data Computer Corp
4040 E McDonald
602-275-0337

AR Little Rock
Decision Data Computer Corp
610 Rock St
501-374-7888

CA Burbank
Decision Data Computer Corp
4405 Riverside Dr
213-843-0512

CA San Diego
Decision Data Computer Corp
Ste E/4433 Convoy St
714-565-6575

CA San Mateo
Decision Data Computer Corp
S Amphlett
415-574-7634

CO Denver
Decision Data Computer Corp
7100 Broadway
303-427-9759

CT West Hartford
Decision Data Computer Corp
630 Oakwood Av
203-247-7171

FL Jacksonville
Decision Data Computer Corp
7647 Alton Av
904-725-3161

FL N Miami Beach
Decision Data Computer Corp
111 NW 183 St
305-653-1660

FL Orlando
Decision Data Computer Corp
7040 Lake Ellenor Dr
305-859-3494

FL Tampa
Decision Data Computer Corp
5445 Mariner
813-894-3328

GA Atlanta
Decision Data Computer Corp
5600 Roswell Rd NE
404-255-5383

IL Elmhurst
Decision Data Computer Corp
180 W Park Av
312-833-0440

IN Indianapolis
Decision Data Computer Corp
2421 Production Dr
317-634-9610

KS Shawnee
Decision Data Computer Corp
7451 Switzer Rd
913-831-3663

LA Metairie
Decision Data Computer Corp
3229 36 St
504-837-9075

MD Laurel
Decision Data Computer Corp
311 Laurel Av
301-792-2680

MA Marlborough
Decision Data Computer Corp
50A Brigham St
617-890-9120

MI Southfield
Decision Data Computer Corp
25140 Lahser Rd C241
313-356-4884

MI Grand Rapids
Decision Data Computer Corp
3685 Hagen Dr SE
616-247-7679

MN Minneapolis
Decision Data Computer Corp
8200 Humboldt Av S
612-881-3340

MO Maryland Heights
Decision Data Computer Corp
75 Worthington
314-878-0423

NJ Union
Decision Data Computer Corp
1600 Rt 22
201-688-4644

NY Albany
Decision Data Computer Corp
310 State St
518-463-5954

NY Cheektowaga
Decision Data Computer Corp
2520 Union Rd
716-693-8472

NY New York
Decision Data Computer Corp
2 Penn Pl
212-695-4814

NY Rochester
Decision Data Computer Corp
167 Flanders St
716-436-6010

NY Syracuse
Decision Data Computer Corp
3650 James St
315-437-6585

NC Charlotte
Decision Data Computer Corp
501 Archdale Dr
704-525-3034

NC Greensboro
Decision Data Computer Corp
323 Swing Rd
919-294-4307

NC Raleigh
Decision Data Computer Corp
7424 Chapel Hill Rd
919-833-5476

OH Cincinnati
Decision Data Computer Corp
11415 Century Blvd
513-671-2300

OH Highland Hts
Decision Data Computer Corp
25 Alpha Park
216-461-9555

OH Columbus
Decision Data Computer Corp
3497 East Livingston
614-239-9100

OH Dayton
Decision Data Computer Corp
1250 W Dorothy Lane
513-222-4242

OK Oklahoma City
Decision Data Computer Corp
519 NW 9
405-236-1409

OK Tulsa
Decision Data Computer Corp
9511 E 46 St
918-622-9610

OR Portland
Decision Data Computer Corp
2828 SW Corbett
503-224-5658

PA Pittsburgh
Decision Data Computer Corp
200 Dinsmore Ave
412-922-1100

RI E Providence
Decision Data Computer Corp
259 Waterman Av

TN Chattanooga
Decision Data Computer Corp
Box 6247
615-267-4682

TN Memphis
Decision Data Computer Corp
1255 Lynnfield Rd
901-761-3770

TN Nashville
Decision Data Computer Corp
1700 Hays St
615-242-4585

TX Dallas
Decision Data Computer Corp
8383 Stemmon Fwy
214-634-8080

TX Ft Worth
Decision Data Computer Corp
5001 Brentwood Stair/Ste 104
817-457-7661

TX Houston
Decision Data Computer Corp
10606 Hempstead Hwy
713-688-5550

UT Salt Lake City
Decision Data Computer Corp
3565 SW Temple
801-266-6772

VA Virginia Beach
Decision Data Computer Corp
Box 62471
804-340-2210

VA Richmond
Decision Data Computer Corp
2015 Staples Mill Rd
804-355-4788

WA Bellevue
Decision Data Computer Corp
11101 NE 8 St
206-624-3877

WI Brookfield
Decision Data Computer Corp
14260 W Greenfield Ave
414-784-6540

ONTARIO, CANADA
Downsview
Decision Data Computer Corp
168A Oakdale Rd
416-745-1342

QUEBEC, CANADA
Dollard Des Ormeaux
Decision Data Computer Corp
70A Blvd Brunswick
514-683-2632

QUEBEC, CANADA
Ville Vanier
Decision Data Computer Corp
99 Bisson
418-527-8462

ENGLAND
Staines
Decision Data Computer Corp
48-54 London Road
011-44784-62421

DECISION STRATEGY CORPORATION

708 3rd Ave
New York, NY 10017
212-599-4700
Contact: Arthur Esch Jr
■ Products & Services
DDP systems
Intelligent (programmable) terminals
Data com. softw. distr. dp systems vend.
Data com. softw. independ. softw houses
Data com. softw. intel. term. vendors
Timesharing/service bureaus

Branch Sales Offices:

CA San Francisco
Decision Strategy Corp
201 Sansome
415-956-6780

GA Atlanta
Decision Strategy Corp
320 Interstate N
404-952-8113

IL Chicago
Decision Strategy Corp
2 Illinois Ctr
312-856-0900

PA Valley Forge
Decision Strategy Corp
Valley Forge Office Colony
215-337-8900

VA Arlington
Decision Strategy Corp
1515 N Courthouse Rd
703-528-4541

DECITEK DIV

JAMESBURY CORP
129 Flanders Rd
Westboro, MA 01581
617-366-8334
Contact: Irwin E Spalding
■ Products & Services
Disc drives, floppy
Tape, paper
Tape punch/reader, paper

Branch Sales Offices:

IL Chicago
First Rep
9400 W Foster Ave

KS Shawnee Mission
Inland Assoc
2310 W 75 St
913-362-2366

MN Eden Prairie
First Rep
7525 Mitchell Rd
612-944-2096

MO St Louis
Inland Assoc
13100 Manchester Rd
314-821-3742

NY Victor
A & D Devices
626 Fishers Run
716-924-9171

OH Cleveland
Geotronics Inc
8180 Brecksville Rd
216-526-2535

OH Columbus
Geotronics Inc
4453 Willowbrook
614-457-8472

PA Hatboro
QED Electronics Inc
300 N York Rd
215-674-9600

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

DEI-TELEPRODUCTS

563 N Citracado Pkwy
Escondido, CA 92025
714-743-8344
Contact: Byron Whartnaby
■ Products & Services
Line drivers
Modems, limited distance
Modems, multipoint
Modems, multiport
MIL 188C adapters

Parallel line extenders
Tech control centers
Code converters
Modem eliminators
Data communications consultants
Branch Sales Offices:

CA Sunnyvale
R C Data
528 Weddell
408-745-7410

CA Playa del Rey
Mark Assoc
7913 W 81 St
213-821-1052

CO Arvada
Claredon Co
Box 1205
303-424-2010

IL Oakbrook
Data-Tel Systems
823 Commerce Rd
312-887-1040

NJ Saddle Brook
LTM Assoc
511 Victor St
201-843-8700

NY New York
LTM Assoc
175 W 12 St
212-243-6155

PA Andalusia
LTM Assoc
965 A Bristol Pk
215-639-3100

WA Bellevue
Data Power
Box 3012
206-453-8200

DELTA DATA SYSTEMS

Woodhaven Ind Pk
Cornwell Heights, PA 19020
215-639-9400

Contact: Barry Maser
■ Products & Services

Disc drives, floppy
Batch terminals
Intelligent (programmable) terminals
Interactive systems
Video data terminals (KSR)
Data com. softw, distr. dp systems vend.
Data com. softw, intel. term. vendors

Branch Sales Offices:

AZ Phoenix
Datatrend
2739 W Palm Ln
602-272-7139

CA Fullerton
Delta Data Systems
2736 W Orangethorpe
714-870-5561

CA Los Angeles
Delta Data Systems
21733 Lassen St
213-998-8402

CA San Francisco
R C Data
528 Wedell
415-656-5791

CO Englewood
Data Systems Mktg
14 Inverness Dr E
303-770-1972

DC Silver Spring
Delta Data Systems Terminal
Networks Inc
118 Eldred Dr
301-622-3535

FL Orlando Hills
Gra-Mar Inc
3165 McCrory Pl
305-894-3351

IL Carol Stream
Delta Data Systems
603 Gunderson
312-686-2726

MI Farmington Hills
Carter, McCormick & Peirce
23995 Freeway Pk Dr
313-477-7700

NY New York City
Delta Data Systems
122 E 42 St
212-682-8836

PA Cornwells Heights
Delta Data Systems
Woodhaven Ind Pk
215-639-9400

WA Seattle
Datec
605 Strander Blvd
206-575-1470

BELGIUM
Brussels Belgium
Synelec Information Systems
Ave Louise 176
6470108

ENGLAND
Hertsfordshire
Delta Data Systems Ltd
Swallowfields Welwyn Garden City
33833

FRANCE
Paris
Peritecnic
90 Ave Albert 1er
7494037

SWITZERLAND
Basel
Wenger Datentechnik
Guterstrasse 253
345096

DELTEC CORP

980 Buenos Ave
San Diego, CA 92110
714-275-1331

Contact: Gary Thomas

Branch Sales Offices:

CA Pasadena
A-F Sales Engineering
1000 E Walnut St
213-681-5631

CA Santa Clara
Thomas Assoc
460 Aldo Ave
408-247-2152

CO Denver
Barnhill Three
1980 S Quebec St
303-750-1222

GA Atlanta
F-M Assoc
2529 A Skyland Dr
404-634-7830

KS Derby
Palatine Sales
221 W Market St
316-788-0621

MD Silver Springs
Sel-Tronics
721 Ellsworth Dr
301-589-3391

MA Waltham
McBar Assoc
195 West St
617-890-0233

MN Minneapolis
Carter Electronics
2415 Anapolis Ln
612-559-1976

NJ Cherry Hill
Megargel/Himmelstein
2428 Rt 38 Aves of Commerce
609-779-0200

NJ Paramus
SDM Representatives
23 N Farview Ave
201-368-0125

OH Wickliffe
Data-Tron
30314 Euclid Ave
216-585-8421

TX Richardson
Barnhill Two
1101 Executive Dr
214-231-2573

WA Bellevue
Pacific NW Electronics
14264 SE Eastgate Way
206-641-6444

AUSTRALIA
Springvale Victoria
Stone Platt Electrical
134 Springvale Rd 3171

FRANCE
Paris
Eleco
8 Rue Sainte-Lucie

ISRAEL
Tel Aviv
Rapac Electronics BV
Box 18053

ITALY
RHO
Dynamex
Via P Bellotti 2

DEST DATA CORP

1285 Forgewood Ave
Sunnyvale, CA 94086
408-734-1234

Contact: Attn: VP Mktg

■ Products & Services
Bar code readers
Word recognition units

Branch Sales Offices:

DC Washington DC
Dest Data Corp
2550 M St
202-466-7067

DEVELCON ELECTRONICS INC

200 North St
Doylestown, PA 18901
215-348-1900

Contact: David A Kane

■ Products & Services
Concentrators
Line sharing units
Modem sharing units
Port selectors
Port sharing units
Modems, limited distance
Modems, voice-grade, low-speed
EIA cable testers
Protocol analyzers
Response-time monitors
Cables, electrical prefabricated extender
Modem eliminators
Switches, data communications, automatic

Branch Sales Offices:

AL Huntsville
Comm International Inc
Box 4530
205-533-3165

AZ Tempe
Qualtech
610 W Broadway
602-966-5900

CA Long Beach
CTI Data Systems
3480 E Spring St
213-426-7375

CA El Granada
DataComm Marketing
Box 1192
415-726-6326

CO Evergreen
Westtek Data Products Inc
Box 1355
303-674-5255

CT Edfield
S & S Electronics Inc
41 Pearl St
203-623-5352

FL Longwood
Southern Data Assoc
Box 3249
305-831-3311

GA Atlanta
Flex-Comm International Inc
3379 Peachtree Rd
404-237-9242

IL Deerfield
J G Janowick Assoc
617 Longfellow Ave
312-948-7177

MD Bethesda
Powell & Pendergraph Inc
7979 Old Georgetown Rd
301-656-4535

MA Lowell
S & S Electronics Inc
80 Stedman St
617-273-0115

NJ Fort Lee
Technical Marketing Assoc
2460 Lemoine Ave
201-224-6911

NM Albuquerque
Qualtech
130 Louisiana NE

NY Pittsford
Cameron Assoc Inc
1 Grove St
716-385-1681

NC Hendersonville
Flex-Comm International Inc
Box 1551
704-693-0920

OH Chagrin
W C Koepf Assoc
Box 16
216-247-5129

OH Spring Valley
W C Koepf Assoc
1245 Night Hawk Trail
513-733-8555

OH Strongsville
W C Koepf Assoc
17107 Partridge Dr
313-459-9150

PA Willow Grove
Powell & Pendergraph Inc
801 Easton Rd
215-657-0330

TX Dallas
S C I Sales
13771 N Central Expwy
214-234-8072

TX Houston
S C I Sales
1199 Nasa Rd
713-488-3728

VA Richmond
Powell & Pendergraph Inc
Box 29643
804-264-2341

WA Seattle
S J I Corp
626 S Alaska St
206-624-9020

ONTARIO, CANADA
Scarborough
Associated Test Equipment Ltd
3530 Pharmacy Ave
416-497-2208

DI/AN CONTROLS INC

944 Dorchester Ave
Boston, MA 02125
617-288-7700
Contact: Donald Blood
■ Products & Services
Teleprinters, impact

DIABLO SYSTEMS INC A XEROX CO

24500 Industrial Blvd Bldg L101
Hayward, CA 94545
415-786-5000
Contact: Robert Burks
■ Products & Services
Cartridge drives
Disc drives, large
Remote job entry terminals
Teleprinters, impact

Branch Sales Offices:

CA San Jose
Diablo Systems
2025 Gateway Pl
408-286-9424

CA Los Angeles
Diablo Systems
8939 S Sepulveda Blvd
213-641-0862

CA Newport Beach
Diablo Systems
4120 Birch St
714-955-1005

IL Barrington
Diablo Systems
South Barrington Rd
312-381-3661

MA Waltham
Diablo Systems
1605 Trapelo Rd
617-890-6400

NJ Marlton
Diablo Systems
900 W State Hwy 70
609-983-3353

NJ Parlin
Diablo Systems
1145 Bordentown Ave
201-727-2357

TX Richardson
Diablo Systems
1231 Columbia Dr
214-234-0885

BELGIUM

Brussels
Diablo Systems
Ave de Fre 263 BP 1 et 2
02 374-91-94

ENGLAND

Surrey
Diablo Systems
19/20 The Broadway Woking Gu 21
5 Ap
048-62-71991

FRANCE

Boulogne
Diablo Systems
2 Rue de la Ferme
01-609-94-18

GERMANY, WEST
Muenchen
Diablo Systems
Riesenfeldstr 75
089-351-70-85

DIALOG SYSTEMS INC

55 Chapel St
Newton, MA 02195
617-969-5600
Contact: Richard W Loriga
■ Products & Services
Word recognition units

DIGICOM DATA PRODUCTS INC.

1440 Koll Circle
San Jose, CA 95112
408-279-8711
Contact: Bill Backus
■ Products & Services
Acoustic couplers
Modems, voice-grade, low-speed
Disc drives, floppy
Discs, floppy
Floppy disc recorders
Data entry terminals, portable

DIGI-DATA CORP

8580 Dorsey Run Rd
Jessup, MD 20794
301-498-0200
Contact: Attn: VP Mktg
■ Products & Services
Tape drives, magnetic

Branch Sales Offices:

CA San Diego
Western Scientific Mktg Inc
5402 Ruffin Rd
714-565-6699

CA Mt View
Eakins Assoc Inc
999 Independence Ave
415-969-4533

MD Jessup
Digi-Data Corp
8580 Dorsey Run Rd
301-498-0200

MA Waltham
Computer Marketing Inc
257 Crescent St
617-894-7000

NY Elmont
Crane & Egert Corp
146 Meacham Av
516-488-2100

NY Rochester
RG Engineering
3100 Monroe Av
716-385-3021

NC High Point
Pen-Tech Assoc Inc
1202 Eastchester Dr
919-883-9125

TX Houston
Data Marketing Assoc Inc
3330 Bering Dr
713-780-2511

Want to receive announcements of
new products?
Turn to **UpDate Service Card, page
201.**

DIGI-LOG SYSTEMS INC
NETWORK CONTROL DIV

Babylon Rd
Horsham, PA 19044
215-672-0800
Contact: Roy Gemberling
■ Products & Services
Modem sharing units

Line drivers
Modems, limited distance
Data content monitors
Error rate detectors

Protocol analyzers
Network management centers
Tech control centers
DDP systems

Data entry terminals, portable
Intelligent (programmable) terminals
Video data terminals (KSR)
Data access arrangement devices

Modem eliminators
Select. & transfer equip., monitor & test
switch. equip.

Select. & transfer equip., patch. equip.
Switches, data communications, automatic
Switches, data communications, manual
Data communications consultants

Branch Sales Offices:

AL Huntsville
A B Andrews & Co Inc
821 Wheeler Ave
205-539-6817

AZ Tempe
Qualtech Inc
610 W Broadway
602-967-4655

CA Laguna Niguel
Digi-Log Systems Inc
33611 Marlinpike Dr
714-661-6599

CA San Diego
Datamax Communications Co
8250 Vickers St
714-292-4607

CA Mountain View
Data Systems Mktg
2680 Bayshore Frontage Rd
415-941-0240

CA San Francisco
Data Systems Mktg
415 Merchant St
415-391-1111

CO Arvada
Claredon Co
8141 W I70 Frontage Rd N
303-424-2010

GA Atlanta
Flex-Comm Intl Inc
3379 Peachtree Rd NE
404-237-9242

IL Des Plaines
Lincoln Hodges & Assoc Inc
3158 Des Plaines Ave
312-297-3810

KS Shawnee
Atech
10704 W 52 Cir
913-268-9644

MA Danvers
John Melanson & Assoc
39 Pine St
617-774-1220

MN Eden Prairie
First Rep Co
6420 Flying Cloud Dr
612-944-2097

MO St Charles
Atech
4020 San Fernando
314-441-5010

NJ Saddlebrook
L & M Assoc
511 Victor St
201-843-8700

NM Albuquerque
Qualtech Inc
130 Louisiana NE
505-255-6100

NY New York
L & M Assoc
175 W 12 St
212-243-6155

NC Research Triangle Pk
A B Andrews & Co Inc
10 Park Plaza
919-549-0563

OH Rising Sun
Mecom Inc
7033 Sandusky Rd
419-457-3231

PA Andalusia
L & M Assoc
965-A Bristol Pk
215-639-3100

TX Dallas
Computer Assoc
212 Empire Ctr, 8383 Stemmons
214-634-1320

TX Houston
Computer Assoc
8100 S Kirkwood
713-498-3050

WA Seattle
SJI Corp
626 S Alaska St
206-624-9020

WI Waukesha
Lincoln Hodges & Assoc Inc
217 Wisconsin Ave
414-542-3087

ONTARIO, CANADA
Toronto
Tele-Radio
301 Super Test Rd
416-661-3221

DIGITAL ASSOCIATES CORP

1039 E Main
Stamford, CT 06902
Contact: Thomas Lucas
■ Products & Services
Remote line printers
Computer/communications interfaces
Ribbons and supplies for terminals and
printers
Switches, data communications, automatic
Switches, data communications, manual
Used equipment
Branch Sales Offices:
CT Stamford
DAC International
1039 E Main St
203-327-9210

DIGITAL COMMUNICATIONS ASSOC INC

135 Technology Pk
Norcross, GA 30092
404-448-1400
Contact: William Goldstein
■ Products & Services
Front-end processors
Multiplexers, intelligent
Port selectors
Remote network processors
Switches, data communications, automatic

Branch Sales Offices:

AZ Scottsdale
Barnhill Three Inc
7319 E Stetson Dr
602-947-7841

CA Mt View
CSS Telecommunications Inc
2680 Bayshore Frontage Rd
415-964-4335

CO Englewood
Barnhill Three Inc
7076 S Alton Way; Bldg A
303-779-3600

CT Norwalk
Datacomm Management Sciences Inc
181 Main St
203-838-7183

GA Norcross
Digital Communications Assoc Inc
135 Technology Park/Atlanta
404-448-1400

IL Rosemont
Information Systems Inc
9800 W Farragut
312-671-7780

MD Silver Spring
Terminal Networks Inc
118 Eldrid Dr
301-622-3535

MA Fairhaven
Data Brain Inc
PO Box 161
617-994-3944

MI Ann Arbor
Gerhard & Assoc Inc
2321 Lantashire
313-996-8077

MN Eden Prairie
First Rep Co of Minnesota
6420 Flying Cloud Dr
612-944-2097

MO St Johns
Midwest Mktg MR Inc
3606 Woodson Rd
314-426-2500

NM Albuquerque
Barnhill Three Inc
1410-D Wyoming NE
505-299-7658

NY Huntington
The Technology Consortium Inc
Box 619
212-594-5880

NY Dewitt
D B Assoc
3307 Erie Blvd E
315-446-0220

OH Columbus
Gerhard & Assoc Inc
1384 Grandview
614-488-9751

PA Norristown
Datacomm Management Sciences Inc
564 Long Meadow Rd
215-539-1217

TX Richardson
Barnhill Two Inc
1101 Executive Dr E
214-231-2573

TX Austin
Barnhill Two Inc
111 W Anderson Ln 221
512-451-0217

TX Houston
Barnhill Two Inc
10606 Hempstead Hwy
713-688-9971

UT Salt Lake City
Barnhill Three Inc
54 W 2100 S
801-484-4496

VA Virginia Beach
Small Business Computer Cntr Inc
2927 Virginia Beach Blvd
804-340-1977

WA Seattle
CSS Telecommunications Inc
15841 32 Ave NE
206-367-1440

WI Milwaukee
Information Systems Inc
Box 20710
414-425-8711

DIGITAL COMMUNICATIONS CORP

19 Firstfield Rd
Gaithersburg, MD 20760
301-948-0850

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Contact: Linda Cooney

■ **Products & Services**

Concentrators
Front-end processors
Message switchers
Multiplexers, time division
Multiplexers, intelligent
Packet processors
Remote network processors
Modems, multipoint
Modems, multiport
Modems, wideband, group band
Modems, wideband, super-group band
Network management centers
Switches, data communications, automatic

Branch Sales Offices:

MD Gaithersburg
Digital Communications
19 Firstfield Rd
301-948-0850

FRANCE

La Plaine St Denis
Le Groupe Scientifique
114 Av Du Pres Wilsonn BP6793211
243-22-44

GERMANY, WEST

Munich
Microwave Assoc GmbH
Weltenburger Stasse 33
089-91-12-78

DIGITAL DATACOM INC

17951 Skypark Cir K
Irvine, CA 92714
714-549-8943

Contact: Jim McKee

■ **Products & Services**

DDP systems
Cartridge drives
Badge readers
Batch terminals
Digital plotters
Remote line printers
Terminal controllers
Computer/communications interfaces
Protocol converters
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.
Data com. softw, independ. softw houses

Branch Sales Offices:

CA Long Beach
CTI Data Systems Inc
3480 E Spring St
213-426-7375

CO Littleton
Davis Assoc
709 W Littleton Blvd 25
303-795-1400

IL Elk Grove
Oasis Sales Corp
2250-K Landmeir Rd
312-640-1850

MA Needham
Jim Wild Inc
570 Hillside Ave
617-444-2366

NM Albuquerque
Par Assoc
2610 San Mateo NE
505-881-5000

NY Jericho
J J Wild Inc
400 Jericho Tnpk
516-935-6600

WA Bellevue
DPM Assoc
515-116 Ave NE 101
206-453-9082

DIGITAL DEVELOPMENT CORP

8650 Balboa Av
San Diego, CA 92123
714-278-9920

Contact: Craig Curtner

■ **Products & Services**

Disc drives, large

Branch Sales Offices:

CA San Diego
Digital Dev Corp
8650 Balboa Ave
714-278-9920

CT Greenwich
Digital Dev Corp
Witherell Dr
203-661-8688

MN Minnetonka
Digital Dev Corp
3915 Tonkawood Rd
612-933-8742

TX Dallas
Digital Dev Corp
6033 E NW Hwy
214-235-5557

ENGLAND

Basingstoke
Bond Close
Kingsland Estate
0256-50408

FRANCE

Florence
DDC Memory Systems
3, Place Gustave
686-26-29

For further catalog information, turn to **UpDate Service Card, page 201.**

DIGITAL EQUIPMENT CORPORATION

1 Iron Way
Marlboro, MA 01752
617-897-5111

Contact: Roger Bentley

■ **Products & Services**

Minicomputers
DDP systems
Add-on main memory
Cartridges
Cartridge drives
Cassettes
Cassette drives
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Tape, magnetic
Tape drives, magnetic
Tape, paper
Tape punch/reader, paper
Badge readers
Bar code readers
Graphic display terminals
Intelligent (programmable) terminals
Interactive systems
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Computer/communications interfaces

Data security devices, softw. security mod.
Used equipment

DIGITAL PATHWAYS INC.

4151 Middlefield Rd
Palo Alto, CA 94306
415-493-5544

Contact: Martha C Zipf

■ **Products & Services**

Add-on main memory

DIGITAL PRODUCTS CORP

4028 NE 6th Ave
Fort Lauderdale, FL 33334
305-564-0521

Contact: W Selwacz

■ **Products & Services**

Automatic calling units

DIGITAL SYSTEMS CORP

3 N Main
Walkersville, MD 21793
301-845-4141

Contact: John R Laughlin

■ **Products & Services**

Front-end processors
Minicomputers
Multiplexers, intelligent
Remote network processors
DDP systems
Disc drives, large
Tape drives, magnetic
Bar code readers
Intelligent (programmable) terminals
Interactive systems
Remote line printers
Teleprinters, impact
Teleprinters, non-impact
Video data terminals (KSR)

Branch Sales Offices:

MD Frederick
Digital Systems Corp
10 West College Ter
301-662-9155

PA Harrisburg
Digital Systems Corp
250 East Park Dr
717-564-8320

WA Washington
Digital Systems Corp
1925 K St
202-466-7715

DIGITAL TELEPHONE SYSTEMS INC

Box 1108; One Commerce Blvd
Novato, CA 94947
415-472-2500

Contact: Bob Horvath

■ **Products & Services**

Computerized branch exchange (CBX)
Response-time monitors
Telecommunications monitor
Switches, data communications, automatic

Branch Sales Offices:

CO Fort Lupton
Digital Telephone Systems Inc
12237 Road 8
303-623-6150

GA Decatur
Digital Telephone Systems Inc
612 Decatur Fed Bldg
404-373-3148

IN Indianapolis
Digital Telephone Systems Inc
8790 Purdue Rd
317-297-3006

NC Sanford
Digital Telephone Systems Inc
PO Drawer 2639
919-258-6045

PA Kingston
Digital Telephone Systems Inc
341 Wyoming Ave
717-287-2319

DIGITECH DATA INDUSTRIES INC

66 Grove St
Ridgefield, CT 06877
203-438-3731

Advertising page Cover III

Contact: Lawrence J Kovarovic

■ Products & Services
Data content monitors
Error rate detectors
Protocol analyzers
Response-time monitors
Network management centers
Tech control centers
Telecommunications monitor

Branch Sales Offices:

CA Newport Beach
The Helfrich Company
1831 Kings Rd
714-631-2300

CO Englewood
Barnhill 2 & 3
7076 S Alton Way Bldg A
303-779-3600

FL Satellite Beach
General Technology
596B Sherwood Ave
305-777-1133

IL Oak Brook
S J Kopp Associates
823 Commerce Dr
312-887-1040

MA Southboro
Victor Electronics
304 Turnpike Rd
617-481-4010

MN Minneapolis
RAE Assoc
7317 Cahill Rd
415-938-9577

OH Columbus
Gerhard & Assoc
2228 Fairfax Rd
614-488-9751

WA Seattle
Distributed Data Products
1200 Westlake Ave N
206-283-4044

ONTARIO, CANADA

Markham
Signatel Ltd
89 Telson Rd
416-495-9229

ENGLAND

Middlesex
Aspen Electronics Ltd
2 Kildare Close

FRANCE

Paris
G W Walton
60 Rue Pierre Charron

DIVA INC

607 Industrial Way W
Eatontown, NJ 07724
201-544-9000
Contact: George Becker
■ Products & Services
Disc drives, large

DMC DIV

CETEC CORP
2300 Owen St
Santa Clara, CA 95051
408-249-1111
Contact: Tom Bowden

■ Products & Services
Modem sharing units
DDP systems
Disc drives, floppy
Interactive systems
Teleprinters, impact
Protocol converters

THE DMW GROUP INC

2395 Huron Pkwy
Ann Arbor, MI 48104
313-971-5234
Contact: Dr Dixon R Doll
■ Products & Services
Data communications consultants
Data com. softw, independ. softw houses

DOBSON WOODBURY RESEARCH INC

390 W Ironwood Dr
Salt Lake City, UT 84115
801-487-9801
Contact: W Kurt Dobson
■ Products & Services
Concentrators
Multiplexers, intelligent
Disc drives, floppy
Tape punch/reader, paper
Badge readers
Bar code readers
Batch terminals
Graphic display terminals
Intelligent (programmable) terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Terminal controllers
Word recognition units
Word processors, communicating
Computer/communications interfaces
Data security devices, encoder/decoders
Data communications consultants
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.
Data com. softw, independ. softw houses
Data com. softw, intel. term. vendors
Lease and resale organizations
Maintenance organizations
Timesharing/service bureaus
Used equipment

Branch Sales Offices:

UT Salt Lake City
Dobson-Woodbury Research
390 Ironwood Dr
801-487-9801

UT Salt Lake City
Terminal Specialties Inc
3999 S Main St
801-262-7100

DOCUMATION INC

PO Box 1240
Melbourne, FL 32901
305-725-5520
Advertising page 142
Contact: John C Barthlemy
■ Products & Services
Disc drives, floppy
Batch terminals
Remote line printers
Remote job entry terminals
Lease and resale organizations
Maintenance organizations

Branch Sales Offices:

CA San Mateo
Documation Inc
2121 S El Camino Real
415-574-4060

CA Irvine
Documation Inc
2171 Campus Dr
714-752-8782

CA Long Beach
Documation Inc
3711 N Long Beach Blvd
213-595-6775

CO Denver
Documation Inc
9745 E Hampden Ave
303-755-5990

CT Hartford
Documation Inc
One Financial Plaza
203-278-2010

CT Greenwich
Documation Inc
Three Pickwick Plaza
203-869-4123

FL Miami
Documation Inc
8001 NW 36 St
305-592-9655/6

FL Tampa
Documation Inc
3214 W Kennedy Blvd
813-879-2895/6

GA Atlanta
Documation Inc
300 Interstate N
404-955-0309

IL Oak Brook
Documation Inc
2021 Spring Rd
312-920-0040

LA New Orleans
Documation Inc
6560 Morrisson Rd
504-241-8194

MD Hunt Valley
Documation Inc
Executive Plaza 1
301-667-4130

MA Waltham
Documation Inc
400-1 Totten Pond Rd
617-890-2650

MI Southfield
Documation Inc
26555 Evergreen Rd
313-353-8181

MO St Louis
Documation Inc
12300 Olive St Rd
314-576-6840

MO Independence
Documation Inc
40 Executive Pl
816-356-1331

NJ Union
Documation Inc
2400 Morris Ave
201-686-5223

NY East Meadow
Documation Inc
1900 Hempstead Tnkp
516-794-1186

NY New York
Documation Inc
One Penn Plaza
212-695-4195

OH Berea
Documation Inc
Three Berea Commons
216-243-0680

OK Tulsa
Documation Inc
3035 E Skelly Dr
918-749-5014/5

- PA Allentown
Documation Inc
1251 S Cedar Cres: Blvd
215-776-1071/2
- PA King of Prussia
Documation Inc
1150 1st Ave
215-337-2850
- RI Providence
Documation Inc
132 George Meohan Blvd
- TX Dallas
Documation Inc
8150 N Central Exprwy
214-750-6160
- TX Dallas
Documation Inc
4230 Spring Valley Rd
214-661-5256
- TX Houston
Documation Inc
8582 Katy Freeway
713-932-9172
- VA McLean
Documation Inc
1616 Anderson Rd
703-827-0220
- WA Seattle
Documation Inc
950 Andover Pk E
206-575-4627
- WI Wauwatosa
Documation Inc
2300 Mayfair Rd
414-257-1750
- VIRGIN ISLANDS
Greenwich
Documation Inc
600 Putnam Ave
203-622-1420
- ENGLAND
Esher Surrey
Documation World Trade Corp
- ENGLAND
Middlesex
Documation Ltd
- FRANCE
Paris
Documation Sarl
- GERMANY, WEST
Frankfurt
Documation GMBH
- NETHERLANDS
Documation BV
- DPF INC
141 Central Park Ave S
Hartsdale, NY 10530
Contact: Anita Buckholtz
■ Products & Services
Computer/communications interfaces
Lease and resale organizations
- Branch Sales Offices:
- AZ Phoenix
DPF Inc
10030 N 25 Dr
- GA Atlanta
DPF Inc
2256 Northlake Pkwy
404-934-9610
- IL Schaumburg
DPF Inc
850 E Higgins Rd
312-843-1800
- TX Houston
DPF Inc
1827 Thonig
713-688-5232
- VA Vienna
DPF Inc
8150 Leesburg Pk
703-821-8766
- DRANETZ ENGINEERING LABS INC
2385 S Clinton Ave
S Plainfield, NJ 07080
201-755-7080
Contact: Arnold Ackerman
■ Products & Services
Electrical-parameters test equipment
Response-time monitors
Power supplies, uninterruptible; line
correctors, etc.
Select. & transfer equip., monitor & test
switch. equip.
- Branch Sales Offices:
- AL Huntsville
Kemp Instruments
Box 5430
205-837-4304
- AZ Scottsdale
Barnhill Three
7319 E Stetson Dr
602-947-7841
- CA Palo Alto
Coherent Mktg Assocs
1890 Embarcadero Rd
415-856-1167
- CA Los Angeles
Ezra Mintz Assoc
8939 S Sepulveda
213-670-5410
- CA San Diego
Ezra Mintz Assocs
7841 Balboa Ave
714-565-4921
- CO Englewood
Barnhill Two & Three
7076 S Alton Way
303-779-3600
- CT Mount Carmel
Scientific Devices
3074 Whitney Ave
203-248-9361
- FL Orlando
Datarep
Box 5929
305-843-5224
- FL Seminole
Datarep
9261 78th Ave N
813-393-1741
- FL Coral Springs
Datarep
8535 NW 29 Dr
305-752-2110
- GA Doraville
Kemp Instruments
3425 Regalwoods Dr
404-938-5973
- IL Elk Grove Village
Loren Green Assocs
30 Martin Ln
312-593-0282
- IN Indianapolis
Loren Green Assocs
4745 W 71 St
317-293-9827
- KS Shawnee
Atech Inc
10704 W 52 Cir
913-268-9644
- LA Lafayette
Kemp Instruments
137 Pembroke La
318-984-3516
- MD Rockville
Electronic Mktg Assocs
11716 Parklawn Dr
301-881-5300
- MA Waltham
Scientific Devices
181 West St
617-890-2252
- MI Farmington
Carter McCormic & Peirce
23995 Freeway Park Dr
313-477-7700
- MN Minneapolis
Loren F Green & Assocs
6225 University Av
612-571-6666
- MO St Charles
Atech Inc
4020 San Fernando
314-441-5010
- NJ Paramus
SDM Representatives
15 Farview Ter
201-368-0123
- NM Albuquerque
Barnhill Three
1410-D Wyoming NE
505-299-7658
- NY Rochester
SDM Representatives
673 Panorama Trail W
716-381-9962
- NC Charlotte
Baesel & Assocs
Box 6153
704-334-4244
- OH Cleveland
Carter McCormic & Peirce
22650 Lorain Rd
216-779-5100
- OH Dayton
Carter McCormic & Peirce
4977 Northcutt Pl
513-222-7700
- OR Portland
Topp Engr Sales Corp
6110 SW Brugger St
503-244-7265
- PA King of Prussia
Electronic Mktg Assoc
210 Goddard Blvd
215-265-1600
- PA Monroeville
Carter McCormic & Peirce
409 Beatty Rd
412-372-4415
- TX Austin
Barnhill Two
111 W Anderson La
512-451-0217
- TX Richardson
Barnhill Two
1101 Executive Dr E
214-231-2573
- TX Houston
Barnhill Two
10606 Hempstead Hwy
713-688-9971
- UT Salt Lake City
Barnhill III
54 W 2100 S
801-484-4496
- WA Bellevue
Topp Engr Sales Corp
Box 250
206-747-5400
- WI Hales Corner
Loren Green Assocs
Box 159
414-344-0637

ONTARIO, CANADA

Scarborough
Associated Test Equip Ltd
3530 Pharmacy Ave
416-497-2208

AUSTRALIA

Arncliffe
Electrical Equip Ltd
192 Princes Hwy
61-8321

AUSTRIA

A-2345 Brunn Am Gebirge
Kontron GmbH & Co Kg
Industriestrasse B13
02236/86-6-31

ENGLAND

London
Euro Electronic Instr Ltd
Shirley House 27 Camden Rd
01-267-2748/9

FRANCE

Velizy Villacoublay
Kontron Electronique
BP 99 6 Rue Des Freres; Caudron
946 97 22

GERMANY, WEST

Munich
Kontron Elektronik GMBH
Breslauer Str 2
89 31 88-1

INDIA

Bombay
Matwane Private
127 Matratma Gardhird
273845

IRAN

Tehran
Irantronics
20 Salm St Roosevelt Ave
831564

ISRAEL

Tel Aviv
Eastronics
11, Roza'nis St
475-151

ITALY

Milan 20090, Segrate
Radiel SA
Residenza Degli Archi 22
02-23.30.56

JAPAN

Tokyo
Toyo Corp
Nihanbashi Chuo-Ku
03-279-0771

MEXICO

Mexico
Fonkel Mexicana SA De CV
Hamburgo No 70-305
511-16-20

NETHERLANDS

The Hague
Hollinda BV
Eisenhowerlaan 112
(70) 512801

NEW ZEALAND

Auckland
G T S Engrg
Heather St Parnell
30-154

NORWAY

Oslo
Metric A S
Ekebergvn 312
02-28 26 24

SOUTH AFRICA

Johannesburg 2001
S'Electronics
Box 70050 Bryanston
488718

SPAIN

Madrid
Aupoca S A
Bernardino Obregon 26
468-5701

SWEDEN

Ostmarksgatan
Ingenjorsfirman Gunnar Petterson
AB
S-123 21 FARSTA
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Tectra A G
Bodenerstrasse 334
01-524527

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Turn to **UpDate Service Card, page
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DTSS INCORPORATED

10 Allen St
Hanover, NH 03755
603-643-6600
Contact: Michael R Vitale
■ Products & Services
Timesharing/service bureaus

DURANGO SYSTEMS

3003 N I St
San Jose, CA 95134
408-946-5000
Contact: John Scandalios
■ Products & Services
DDP systems
Batch terminals
Intelligent (programmable) terminals
Interactive systems
Remote line printers
Remote job entry terminals
Teleprinters, impact

Branch Sales Offices:

CA Fresno
Lincoln Computer Mgmt Sys
4221 W Siera Madre S 294
209-268-9751
CA Long Beach
Falcon Systems Inc
4647 Long Beach Blvd C-3
213-595-6935/6936
CA Walnut Creek
Datamatic Systems Inc
1776 Ygnacio Valley Rd
415-944-9311
CA Laguna Hills
California Business Systems Inc
25283 Cabot Rd
714-581-9560
CA Burlingame
Durango Systems Inc
1818 Gilbreth
415-697-3661
CA Encino
Data Dimensions Inc
15760 Ventura Blvd
213-990-9200
CA San Francisco
Mitsui & Co
One California St
415-981-2277
CO Steamboat Springs
PRT Investments
1845 Club House Dr
315-682-7884
CT Norwalk
Data Dimensions Inc
50 Washington St
203-866-0533

FL Miami
Professional Computer System Inc
Plaza Executive Ctr;1515 NW 167
St
305-625-1433
FL Tampa
Datamark Inc
4950 W Kennedy Blvd
813-872-5613
GA Atlanta
Data Dimensions Inc
2580 Cumberland Pkwy
404-433-2023
IL Lombard
Falcon Systems Inc
246 E Janata Blvd
312-629-9150
IL Glen Ellyn
Data Dimensions Inc
800 Roosevelt Rd
312-858-3770
IN Sellersburg
S I Computer Services Inc
110 N Indiana Ave
812-246-3356
KS Overland Park
Data Marketing
300 Fox Hill Office Bldg;4550 W
109 St
913-341-8300
KS Wichita
Main Electronics Inc
225 Ida
316-267-3581
MD McLean
Simcon Inc
7655 Old Springhouse Rd
703-522-8206
MA Framingham
Star Systems Inc
693 Cochituate Rd
617-235-900
MI Farmington Hills
Central Data Systems Inc
23880 Industrial Pk Dr
313-478-7000
MN Minneapolis
Computer Central
6600 France Ave S
612-927-4775
NV Reno
Sierra Office Concepts
255 Bell St
702-786-7681
NJ Cranford
Independent Financial Agents Inc
111 N Ave W
201-276-5220
NM Santa Fe
The SES Group
3375 Cerrillos Rd
505-471-3672
NY New York
Data Dimensions Inc
60 E 42 St
212-687-2030
OH Cleveland
Comstar Inc
1214 Smith Ct
216-331-6585
OR Portland
Computer Products Unltd Inc
2828 SW Corbet St
503-222-2226
TX Houston
Sunbelt Data Services Inc
5855 Sovereign Dr
716-777-6515

VA Roanoke
Automated Data Systems Inc
Box 8605;3016 Franklin Rd SW
703-344-6818

WI Milwaukee
Doyle Data Systems Inc
740 N Plankinton Ave
414-271-5688

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Norango Computer Systems Inc
801 York Mills Rd
416-449-2761

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Hasler Argentina SAIC
Jose E Uriburu 754 6 Piso
47-9722-3560

AUSTRALIA
Wollstonecraft NSW 2065
Rockend Pty Ltd
7 Cable St
02-638-6363

COLOMBIA
114 Bogota 1
International Computer Machines
Box 19403
011-57-245-6010

ENGLAND
Egham Surrey TW20 9EY
Computer Ancillaries Ltd
64 High St
EGHAM 6455

FRANCE
75013 Paris
MBS France
26-28 Rue de la Providence
580-02-03

GERMANY, WEST
D-6380 Bad Homburg
Novotron
Gerte-Vertriebs GmbH;Am
Elisabethenbrunnen 1
0-61-72-44402

JAPAN
Chiyoda-Ku Tokoyo
Mitsui & Co Ltd
2-1 Ohtemachi 1-Chome
03-285-4155

MEXICO
Mexico 18 DF
Informatica Nacional SA
Insurgentes Sur No 933
523-53-34

NETHERLANDS
Nijmegen 6503 GC
Computron Nederland BV
Box 6647
562714

PANAMA
Panama 5
Electronico Balboa SA
Aptdo 4929
64-2700

SOUTH AFRICA
Randburg
Tecnetics (Pty) Ltd
Box 56412;Pinegowrie 2123
011-27-48-6429

URUGUAY
Montevideo
Guillermo Kraft del Uruguay SA
Av Libertador;Brig Gral
Lavaljeja 2083
2-45-88

DYNATECH DATA SYSTEMS
7644 Dynatech Ct
Springfield, VA 22153
703-569-9000
Contact: Karl Damanda

■ Products & Services
Modems, limited distance
EIA cable testers
Protocol analyzers
Tech control centers
Data jacks and plugs
Modem eliminators
Select. & transfer equip., monitor & test
switch. equip.
Select. & transfer equip., patch. equip.

Branch Sales Offices:

AL Huntsville
FM Assoc Ltd
2804 S Memorial Pkwy
205-536-9990

AZ Scottsdale
Faser Technical Sales
11421 N 66 St
602-948-4404

CA Mission Viejo
Dynatech Data Systems
27666 Esla
714-770-4535/4536

CA Sunnyvale
Inter-Link Systems
580 Weddell Dr
408-744-1930

CA Torrance
Allen Edwards Assoc Inc
2808 Oregon Ct
213-328-9770

FL Orlando
FM Assoc Ltd
5018 Mortier Ave
305-851-5710

FL Jupiter
FM Assoc Ltd
110 Yacht Club Pl
305-746-2996

GA Atlanta
FM Assoc Ltd
Box 9901
404-634-7830

IL Bloomingdale
Scientific Devices-Central
255 E Lake St
312-894-5470

KS Shawnee Mission
Technical Sales Assoc
9211 Bond
914-888-3330

MD Rockville
Wiltronix
5504 Waterway
301-460-1454

MA Wakefield
Instrument Dynamics Inc
Lakeside Office Pk
617-245-5100

MI Ann Arbor
ARC Electronic Assoc
2500 Packard Ave 202
313-973-1133

MN Eden Prairie
Scientific Devices-Minn
7032 Willow Creek Rd
612-944-3515

MO St Louis
Technical Sales Assoc
Box 10907
314-725-5361

NJ East Orange
Friedman Associates
134 Evergreen Pl
201-673-2500

NJ Cherry Hill
Megargel/Himmelstein Assoc Inc
2428 Rt 38
609-779-0200

NM Albuquerque
Data Systems Mktg
3620 Wyoming NE
505-294-5790

NY N Syracuse
NACO Electronics
Box 276
315-699-2651

NC Ramseur
FM Assoc Ltd
PO Box 156;106 Elam Ave
919-824-8461

OH Cleveland
ARC Electronic Associates
21330 Center Ridge Rd
216-333-8375

OH Miamisburg
ARC Electronic Assoc
228 Byers Rd
513-859-3040

OR Portland
Thorson Company Northwest
7000 SW Hampton St
503-620-5800

PA Blue Bell
Dynatech Data Systems
1777 Walton Rd
215-542-8286

TX Arlington
Dynatech Data Systems
617 W Main St
817-265-6101

TX Richardson
Barry Sales
709 Lingo Dr
214-234-0255

UT Salt Lake
Thorson Rocky Mountain Inc
3691 W 1987 S

WA Bellevue
Thorson Company Northwest
1 Lake Bellevue Dr
206-455-9180

ONTARIO, CANADA
Scarborough
Associated Test Equip
3530 Pharmacy Ave
416-497-2208

FRANCE
Rungis, Cedex
Dynatech Data Communications
143 Rue de la Tour, Centra 120
687-0579

EASTMAN KODAK CO
343 State St
Rochester, NY 14650
Contact: Joseph Keegan
■ Products & Services
Microfilm equipment, systems and services

ECONOMICS & TECHNOLOGY INC
101 Tremont St
Boston, MA 02108
617-423-3780
Contact: Nelson Hanover
■ Products & Services
Data communications consultants

EDO WESTERN
2645 South 300 West
Salt Lake City, UT 84115
801-486-7481
Contact: Randall Waters
■ Products & Services
Intelligent (programmable) terminals

EDUCATIONAL DATA SYSTEMS

1682 Langley Ave
Irvine, CA 92714
714-556-4242
Contact: Paul Davies
■ Products & Services
Minicomputers
Computer/communications interfaces
Branch Sales Offices:
CA Santa Ana
Educational Data Systems Mfg
647 Young St
714-549-5066

EDWARDS CO

90 Connecticut Ave
Norwalk, CT 06856
203-838-8441
■ Products & Services
Fire Detection/Protection Equipment

EECO INCORPORATED

1601 E Chestnut Av
Santa Ana, CA 92701
714-835-6000
Contact: Dane Henirksen
■ Products & Services
Tape punch/reader, paper
Intelligent (programmable) terminals
Switches, data communications, manual

Branch Sales Offices:

CA Los Altos
Recht Associates
900 N San Antonio Rd
415-941-0336
CA San Diego
Mesa Eng Sales Assoc
7525 Convoy Ct
714-278-8021
CA Agoura
Astralonics
28914 Roadside Dr
213-990-5903
IL Elk Grove Village
Oasis Sales
1101 Tonne Rd
312-640-1850
MD Rockville
Electronic Marketing Assoc
11716 Parklawn Dr
301-881-5300
MI Farmington Hills
Lowell-Wendt Marketing Co
27650 Farmington Rd
313-553-9800
NJ Englewood
Tecnimat
500 Grand Ave
201-461-8686
NY Endicott
Tech-Mark Inc
101 Jefferson Av
607-748-7473

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Card, page 201.

ELECTRODATA INC

7015 Walton Road
Walton Hills, OH 44146
216-333-1471
Contact: Attn: VP Mktg
■ Products & Services
Line sharing units
Acoustic couplers
Fiber optic systems
EIA cable testers
Electrical-parameters test equipment
Error rate detectors

Cables, electrical prefabricated extender
Cables, optical fiber
Modem eliminators
Select. & transfer equip., reconfig. equip.
Switches, data communications, manual

Branch Sales Offices:

CA El Granada
DCM
532 Palma
415-726-6326
DC Linthicum Hgts
KD Assoc
201 Benton
301-636-1151
MA Neidham
East-Mark
10 Kearney Rd
617-449-0050
MI Ann Arbor
ARC Assoc
2500 Packard Ave
313-973-1133
MN Minneapolis
RAE Assoc
7317 Cahill Rd
612-835-2100
MO St Louis
Inland Assoc
13100 Manchester Rd
314-821-3742
NJ Cherry Hill
Megargel/Himmelstein Assoc
2428 Rt 38
609-779-0200
NY Harrington Park
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103 First St
212-687-2455
NY DeWith
DB Assoc
3307 Erie Blvd
315-446-0220
OH Cleveland
ARC Assoc
21360 Center Ridge Rd
216-333-8375
PA Pittsburgh
ARC Assoc
160 N Craig St
412-681-8609
RI Newport
Newport Data Assoc
126 Thames St
401-849-5960
TX Dallas
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7616 LBJ Freeway
214-980-7432
WA Bellevue
DPM Inc
515 116 Ave NE
206-453-9082

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Ottawa
Louis Albert Assoc Inc
2264 Stevenage Dr
613-737-5941

FRANCE

Sevres
Tekelec Airtronic
BP No 2
(1) 027-75-35

GERMANY, WEST

Koln
Telonic Industries GMBH
Friedrichstrabe 14-16
02203-53001

SWITZERLAND

Geneva
Interep SA
4 cours des Bastions
022/208346

ELECTRONIC INTERFACE ASSOC INC

174 W 76 St
New York, NY 10023
212-595-8935
Contact: George Engel
■ Products & Services
Minicomputers
Modem sharing units
Multiplexers, frequency division
Multiplexers, time division
Multiplexers, intelligent
Port selectors
Port sharing units
Remote network processors
Acoustic couplers
Line drivers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Modems, wideband, half-group band
Modems, wideband, group band
Modems, wideband, super-group band
Data content monitors
EIA cable testers
Error rate detectors
Protocol analyzers
Response-time monitors
RTS emulator
Network management centers
Tech control centers
Telecommunications monitor
Cassettes
Cassette drives
Disc drives, floppy
Discs, floppy
Batch terminals
Data entry terminals, portable
Digitized voice processors
Facsimile terminals
Interactive systems
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Automatic answering units
Automatic calling units
Cables, electrical prefabricated extender
Code converters
Computer/communications interfaces
Data access arrangement devices
Data compactor
Data jacks and plugs
Data security devices, encoder/decoders
Error Controllers
Furniture, cabinets, terminal enclosures
Modem eliminators
Protocol converters
Pulse and signal regenerators
Select. & transfer equip., monitor & test
switch. equip.
Select. & transfer equip., patch. equip.
Select. & transfer equip., reconfig. equip.
Switches, data communications, automatic
Switches, data communications, manual
Data communications consultants
Data com. softw, distr. dp systems vend.
Data com. softw, intel. term. vendors
Maintenance organizations
Used equipment

ELECTRONIC PROCESSORS INC

1265 W Dartmouth
Englewood, CO 80110
303-761-8540
Contact: Robert Derschang
■ Products & Services
Cartridge drives
Cassette drives
Tape drives, magnetic

ELECTRO RENT

4131 Vanowen Pl
Burbank, CA 91505
213-843-3131
Contact: William Hauf
■ Products & Services
Acoustic couplers
Modems, limited distance
Modems, voice-grade, low-speed
Graphic display terminals
Intelligent (programmable) terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Lease and resale organizations

Branch Sales Offices:

- CA Mountain View
Electro Rent Corp
2230 Charleston Rd
415-964-5500
- CA Santa Ana
Electro Rent Corp
2800 S Main
714-979-5620
- CA Burbank
Electro Rent Corp
4131 Vanowen Pl
213-843-3131
- FL Orlando
Electro Rent Corp
771 Kirkman Rd
305-299-6701
- GA Atlanta
Electro Rent Corp
3951 Pleasantdale Rd
404-499-4800
- IL Elk Grove
Electro Rent Corp
1699 Elmhurst Rd
312-956-8380
- MD Beltsville
Electro Rent Corp
10232 Southard Dr
301-792-0448
- MA North Billerica
Electro Rent Corp
12 Republic Rd; Treble Cove
Indust Pk
617-273-2165
- MI Livonia
Electro Rent Corp
12894 Farmington Rd
313-522-8550
- NJ Cedar Grove
Electro Rent Corp
216 Little Falls Rd
201-857-2280
- TX Dallas
Electro Rent Corp
12011 Coit Rd
214-387-3703

ELGAR CORP

8225 Mercury Ct
San Diego, CA 92111
714-565-1155
Advertising page 154
Contact: John Watterman

■ Products & Services

Power supplies, uninterruptible; line
correctors, etc.

Branch Sales Offices:

- AL Huntsville
Pen-Tech Assoc Inc
3322 Memorial Pkwy SW
205-881-9298
- AZ Tempe
Trembly Assoc
Box 27468
602-967-2058
- CA Redondo Beach
Ward/Davis Assoc
2615 Manhattan Beach Blvd
213-973-7772
- CA San Diego
Ward/Davis Assoc
2333 Camino Del Rio S
714-298-8912
- CA Escondido
WLB Assoc
19995 Elfin Forest Rd
714-744-1122
- CA San Jose
D P Assoc
4010 Moorpark Ave
408-296-1492
- CO Arvada
Emcar Marketing Inc
8041 W I-70 N Frontage Rd
303-424-0108
- CT Hamden
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2315 Whitney Av
203-281-0810
- FL Maitland
Pen-Tech Assoc Inc
111 S Maitland Ave
305-645-3444
- FL Deerfield Beach
Pen-Tech Assoc Inc
201 SE 15 Tr
305-421-4989
- GA Manelita
Pen-Tech Assoc Inc
627 Cherokee St
404-424-1931
- IL Arlington Heights
315 W University Dr
121 S Wilke Rd
312-394-3380
- IL Indianapolis
Dytec/Central Inc
25 Beachway Dr
317-247-1316
- KS Lenexa
Dytec/South Inc
8245 Nieman Rd
913-888-0215
- MD Rockville
Electronic Marketing Assoc Inc
11716 Parklawn Dr
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- MA Holbrook
McLellan Assoc
Box 328 63 Cedar Hill Rd
617-767-4771
- MA Wakefield
Pat Jenks Assoc Inc
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617-246-1590
- MI Madison Heights
WKM Assoc Inc
345 W Girard
313-588-2300
- MN Minneapolis
Berndt Assoc Inc
8633 Harrison S
612-835-4818

- MO Hazelwood
Dytec/South Inc
320 Brookes Dr
314-731-5400
- NM Albuquerque
Trembly Assoc
119 Quincy NE
505-266-8616
- NY Great neck
Measurement Tech
159 Northern Blvd
516-482-3500
- NY Syracuse
Naco Electronics Corp
Box 276
315-699-2651
- NY Utica
Naco Electronics Corp
2631 Edgewood Rd
315-732-1801
- NY Fairport
Naco Electronics Corp
6780 Pittsford-Palmyra Rd
716-223-4490
- NC High Point
Pen-Tech Assoc Inc
1202 Eastchester Dr
919-883-9125
- OH Cleveland
WKM Assoc Inc
16141 Puritas Av
216-267-0445
- OH Dayton
WKM Assoc Inc
7913 S Suburban Rd
513-434-7500
- PA King of Prussia
Electronic Marketing Assoc Inc
210 Goddard Blvd
215-265-1600
- PA Pittsburgh
WKM Assoc Inc
90 Clairton Blvd
412-892-2953
- TX Dallas
Data Aids Assoc
2880 LBJ Freeway
214-620-1551
- TX Houston
Data Aids Assoc
1440 North Loop
713-862-6685
- UT Sandy
Emcar Marketing Inc
10493 Dimple Dell Rd
801-943-1240
- WA Bellevue
Data Power Sales Co
Box 3012
206-453-8200
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Jerome & Francis Co Ltd
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604-980-4831
- ONTARIO, CANADA**
Richmond
Interfax Systems Inc
Box 880
613-838-3187
- QUEBEC, CANADA**
Laprairie
Interfax Systems Inc
Box 190
514-861-2977
- ARGENTINA**
1002 Buenos Aires
Iota SACIFIA
25 de Mayo 786; 5° Piso Of. 35
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32-0493

AUSTRALIA

South Melbourne Vic
Warburton Franki Ind
220 Park St
60-94999

AUSTRIA

Brunn AM Gebirge
Kontron GMBH Und Co KG
Industriestrasse B 13
02236/86/6/31

BELGIUM

Brussels
C N Rood S A
Place De Jamblinne De Meux 37
02/735.21.35

CHILE

Santiago
Coasin Chile Ltda
Cas 14588;Correo 21
8214

COLOMBIA

Bogota
Ingenieria Electronica Diselec
Av Caracas 37-20
2-85-14-93

COSTA RICA

San Pedro
Electrotecnica SA
Apartado 15
21-32-42

DENMARK

DK-2750 Ballerup
Tage Olsen A/S
Box 225;Ballerup Byvej 222
2-65-81 11

ECUADOR

Quito
Celco CIA Ltda
Box 4093
544497

ENGLAND

Middlesex
MPL
Belvedere Works-Bilton Way;Pump
Lane Ind Estate;Hayes UB3 3ND
01-848-9871

ENGLAND

Reading Berks
Wavetek Electronics Ltd
109 Crockhamwell Rd Woodley
Reading 0734 (694944)

FINLAND

Kauniainen
Oy Findip AB
Teollisuustie 7;Box 34
90-502255

FRANCE

Buc
MB Electronique
Rue Fourny-ZAC de BUC BP No 31
956.81.31

GERMANY, WEST

8 Munchen 71
Wavetek Electronics GmbH
Wolftratschauser Strasse 169
089 79-49-50

GERMANY, WEST

8057 Eching B Munich
Kontron Elektronik GMBH
Breslauer Str 2
89 21 88-1

GREECE

Athens 612
Hellenic Scientific Rep Ltd
11 Vrassida St
711.140/713.154

HONG KONG

Hong Kong
Gilman & Co Ltd
Box 56;Electronics Dept
3-427144

INDIA

New Delhi
Indian Avitronics
10 Hailey Rd
110001 44301

INDIA

Selatan
P T Indo Kappa Elektroteknik
Indoplano Group;Box 424/KBY
42796-41952

ISRAEL

Tel Aviv
Racom Electronics Co Ltd
Box 21120
03-453151

ITALY

Milano
Sistrel SPA
Via Timavo 66;20099 Sesto S
Giovanni
2485233

ITALY

Rome
Sistrel SpA
Via Giuseppe Armellini 37
5915551

JAPAN

Tokyo
Toyo Corp
Box 5014;Tokyo International
279 0771

MALAYSIA FED OF

Singapore 5
O'Connor's Pte Ltd
PO Box 615
637944

MEXICO

Mexico 12
Mexitek SA
Eugenia 408 Deptos 1 y 5;APDO
Postal 1012
905 536-09-10

MEXICO

Mexico
Maquinaria IGSA SA
Paseo de la Reforma 5287
570-35-88

NETHERLANDS

Rijswijk
C N Rood B V
11-13 Cort Van der Lindenstraat
070-99-63-60

NETHERLANDS ANTILLES

Curacao
Industrial Electronics (ANT) NV
Centro Comercial Antilia 1
37201/02

NIGERIA

Lagos
Earth Sciences Ltd
Box 6352
43233

NIGERIA

Ibadan
Joint Komputer Konsultancy Ltd
21 Ondo St;PO Box 2194-Bodija
Estate

NORWAY

Norway
Teleinstrument AB
Box 134;1371 Asker
02-78-94-60

PHILIPPINES

Makati Metro Manila
Cardinal Electronics Corp
201 Salcedo St
88-24-78/88-70-97

SAUDI ARABIA

Jeddah
Bugshan Corp
C R 8825;Box 5880
32684/26992

SOUTH AFRICA

Transvaal
Biowave Electronics Pty Ltd
Box 78502;Sandton 2146
783-5400

SPAIN

Madrid-14
Kontron SA
Apartado De Correos 14.396
7-34-84-13

SWEDEN

Vallingby
Teleinstrument AB
Box 490 Maltesholmsvagen 138
08/38/03 70

SWITZERLAND

Zurich
Kontron Electronig AG
Bernstrasse 169
01-62-82-82

TAIWAN

Taipei
Don Business Corp
Box 36329
5817623/5712911

THAILAND

Bangkok-11
Dynamic Supply Engineering ROP
56 Ekami;Sukhumvit 63
3914434/3928532

TURKEY

Yenisehir-Ankara
Tifa Electronics
Box 3
17 6 57/27 37 27

VENEZUELA

Caracas 106
Teva
Apartado 60.656
61-56-58/61-87-51

EMERSON INDUSTRIAL CONTROLS
DIV

3300 S Standard St
Santa Ana, CA 92702
714-545-5585

Contact: Frank Chandler

Branch Sales Offices:

CA Santa Ana
Emerson Ind Controls Div
3300 S Standard
714-545-5585

MO St Ann
Emerson Ind Controls Div
11037 Easy St
314-291-4535

NJ Palisades Park
Emerson Ind Controls Div
321 Commercial Av
201-224-6306

OH Englewood
Emerson Ind Controls Div
PO Box 94
513-836-9716

VA Richmond
Emerson Ind Controls Div
5407 Lakeside
804-264-2528

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

EMM COMPUTER PRODUCTS DIV

2311 W El Segundo Blvd
Hawthorne, CA 90250
213-777-4070

Contact: Dave Harmon

■ Products & Services

Add-on main memory

Branch Sales Offices:

CA Hawthorne
EMM Corp
2311 W El Segundo Blvd
213-777-4070

IL Des Plaines
EMM Corp
1400 E Touhy Ave
312-297-3110

MA Wakefield
EMM Corp
607 North Ave
617-246-2565

MI Southfield
EMM Corp
25160 Lanser Rd
313-352-1040

NJ Clifton
EMM Corp
1011 Clifton Ave
201-777-4404

OH Cleveland
EMM Corp
6500 Pearl Rd
216-884-1980

TX Dallas
EMM Corp
13773 N Central Expwy
214-231-2539

TX Houston
EMM Corp
8323 Southwest Frwy
713-778-0287

WI Menomonee Falls
EMM Corp
N81 W12920 Leon Rd
414-251-1113

EMM PERIPHERAL PROD DIV

1015 Timothy Dr
San Jose, CA 95133
408-298-7080

Contact: Jack McLaughlin

■ Products & Services

Cartridges

Cartridge drives

Disc drives, large

Disc packs

Branch Sales Offices:

IL Desplaines
EMM Peripheral Prod Div
1400 East Touhy
312-297-3110

NJ Clifton
EMM Peripheral Prod Div
1611 Clifton Ave
201-777-4404

EMR DATA SYSTEMS

PO Box 3041
Sarasota, FL 33578
813-371-0811

Contact: Shelby P Bass

■ Products & Services

Multiplexers, frequency division

Multiplexers, time division

Facsimile terminals

Data security devices, encoder/decoders

Branch Sales Offices:

CA Carson
EMR Data Systems
20720 Leapwood Ave
213-515-0449

MD Silver Spring
EMR Data Systems
1320 Fenwick Ln
301-588-8200

EPIC DATA CORP

7280 River Rd
Richmond, BC V6X1X5
604-273-9146

Contact: H Eppich

■ Products & Services

Concentrators

Front-end processors

Line drivers

DDP systems

Cassette drives

Disc drives, floppy

Badge readers

Bar code readers

Batch terminals

Intelligent (programmable) terminals

Interactive systems

Terminal controllers

Branch Sales Offices:

AZ Scottsdale
BFA Corp
4426 N Saddlebag Tr
602-994-5400

CA Anaheim
Moxon Electronics
1440 S State College Blvd
714-635-7600

CA Hacienda Heights
Epic Data Corp
1724 S Heather Hill Rd
213-965-2886

FL Orlando
COL-INS-Co Inc
Box 13189
305-423-7615

IL Downers Grove
Epic Data
3415 Hickory Tr
312-968-8620

IL Elk Grove Village
SMC Inc
1501 Carmen Dr
312-593-6220

MD Rockville
T E Corp
701 East Gude Dr
301-340-0303

MA Winchester
J & J Assoc Inc
255 East St
617-729-5770

MO Grandview
Digital Systems Sales
4006 136 Terrace
816-765-3337

NY Mamaroneck
Cane Technical Sales
1032 Mamaroneck Ave
914-698-4411

NY E Syracuse
Ossman Instruments
6666 Old Collamar Rd
315-437-6666

PA Pittsburgh
WKM Assoc Inc
90 Clairton Blvd
412-892-2953

EPICOM INC

592 N Douglas Ave
Altamonte Springs, FL 32701
305-869-5000

Advertising pages 94,95

Contact: Bill Adams

■ Products & Services

MIL 188C adapters

Parallel line extenders

Data content monitors

Electrical-parameters test equipment

Error rate detectors

Protocol analyzers

Response-time monitors

Tech control centers

Telecommunications monitor

Cartridge drives

Select. & transfer equip., monitor & test

switch. equip.

Select. & transfer equip., patch. equip.

Branch Sales Offices:

AL Huntsville
W A Brown Instruments Inc
Box 4560
205-883-8660

AZ Phoenix
The Thorson Co
2505 E Thomas Rd
602-956-5300

AZ Phoenix
Peripherals Inc
1320 E Bethany
602-274-8999

CA Mountain View
CSS Telecommunications
2680 Bayshore Frontage Rd
415-964-4335

CA San Jose
EPICOM Inc
5445 Ora St
408-255-6851

CA Cupertino
Rikei Corp of America
10050 N Wolfe Rd SW1
408-257-7943

CO Englewood
Thorson Rocky Mountain Inc
7076 S Alton Way
303-779-0660

CT Northford
EPICOM Inc
35 Footehill Rd
203-484-0211

IL Des Plaines
EPICOM Inc
220 E Devon Ave
312-298-9337

KS Lenexa
Dytec South Inc
8245 Nieman Rd
913-888-0215

MD Cockeysville
Advanced Technical Sales
10534 Lakespringway; Box 67
301-666-9027

MA Woburn
EPICOM Inc
139 New Boston Pk
617-933-3688

MO Hazelwood
Dytec South Inc
320 Brooks Dr
314-731-5400

NJ Howell
EPICOM Inc
16 Underhill Rd
201-364-5842

NM Albuquerque
Data Handling Co Inc
218 Manzano NE
505-268-4364

Products are listed alphabetically in the **Products & Services Directory**, page 5

- NC** Durham
W A Brown Instruments Inc
123 1/2 Orange St
919-682-2383
- OH** Chagrin Falls
W C Koepf Assoc
68 Olive St
216-247-5129
- OH** Spring Valley
W C Koepf Assoc
1245 Night Hawk Trail
513-733-8555
- OK** Tulsa
Comspec Inc
Box 7597
918-743-6892
- PA** Jenkintown
Stein Instrumentation Corp
413 Johnson St
215-885-2370
- SC** Columbia
W A Brown Instruments Inc
1201 St Andrews Rd
803-798-3297
- TN** Oak Ridge
W A Brown Instruments Inc
733 Emory Valley Rd
615-482-5761
- TX** Austin
Comspec Inc
Box 15911
512-837-3881
- TX** Houston
Comspec Inc
Box 79438
713-461-4487
- TX** Richardson
Comspec Inc
Box 693
214-234-4137
- UT** Salt Lake City
The Thorson Co
3691 West 1987 S
801-973-7969
- WA** Seattle
CSS Telecommunications
15841 32 Ave NE
206-367-1440
- ENGLAND**
Surrey
EPICOM Inc
33 Hillsborough Park Camberley
276-66210
- ISRAEL**
Tel Aviv
Bitcom Agencies Ltd
Devorah Hanviah St
416-292-1475
- MEXICO**
Mexico 12 DF
Transdata SA
E Rebsamen 413-A
905-543-5054
- NEW ZEALAND**
Wellington
High-Tech
Box 1980
724-739
- REPUBLIC OF CHINA**
Taiwan
Syscom Computer Engineering Co.
Box 48-130 Taipei
02-7026284
- SOUTH AFRICA**
Transvaal
Grinel Data Systems
Trust Bank Centre Hill
- SPAIN**
Barcelona
Hardware and Software
Milanesado 1 bis
2042099
- SWEDEN**
Solna
Svea Data Comm
Box 3004 Industrivaegen 5
8-820335
- ESTERLINE ANGUS INSTRUMENT CORP**
PO Box 24000
Indianapolis, IN 46224
317-244-7611
Contact: Attn: VP Mktg
■ Products & Services
Front-end processors
Multiplexers, intelligent
- Branch Sales Offices:**
CA City of Industry
Esterline Angus
137 N Puente Ave
213-380-1621
- CA** Hayward
Esterline Angus
3401 Investment Blvd 8
415-785-8232
- IL** Elmhurst
Esterline Angus
188 Industrial Dr
312-833-4410
- MA** Framingham
Esterline Angus
223 Walnut St
617-235-5343
- NJ** Lodi
Esterline Angus
34-23 Wisse St
201-471-0084
- PA** Oreland
Esterline Angus
Penn Plaza
215-887-2268
- SC** Houston
Esterline Angus
7207 Regency Sq Blvd
713-782-9962
- E-SYSTEMS INC GARLAND DIV**
1200 Jupiter Rd
Garland, TX 75040
214-272-0515
Contact: Richard Dirks
■ Products & Services
Digital service units
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Digitized voice processors
Facsimile terminals
Graphic display terminals
Intelligent (programmable) terminals
Voice digitizers
- Branch Sales Offices:**
CA Van Nuys
E-Systems Inc
5430 Van Nuys Blvd
213-986-9963
- FL** Ft Walton Beach
Focoin Inc
233 Yacht Club Dr NE
904-243-0127
- GA** Warner Robins
E-Systems Inc
Drawer ii
912-923-3616
- MA** Lexington
E-Systems Inc
9 Meriam St
617-861-9050
- MO** St Louis
E-Systems Inc
11960 Westline Indus Dr
314-576-1770
- NJ** Tinton Falls
E-Systems Inc
776 Shrewsbury Av
201-747-3101
- NY** Rome
E-Systems Inc
Box 767
315-336-1911
- OH** Dayton
E-Systems Inc
5030 B Broughton Pl
513-254-8464
- OK** Oklahoma City
E-Systems Inc
Box 15420
405-737-7610
- TX** San Antonio
E-Systems Inc
7039 San Pedro
512-341-3304
- VA** Arlington
E-Systems Inc
1901 N Moore St
703-524-2310
- VA** Hampton
E-Systems Inc
Box K Riverdale Sta
804-838-2010
- BELGIUM**
Brussels
E-Systems Inc
Box 2 Ave de Colombie 10
672-2320
- ITALY**
Rome
E-Systems Inc
Via di Sanaorina/00196
396-6398
- JAPAN**
Tokyo
E-Systems Inc
Room 401 Tanaka Bldg 1-15-4
Nishi Azabu Minato-Ku
03-402-1367
- PHILIPPINES**
Metro-Manila
E-Systems Inc
Box 658 MCCPO Makati
78-64-15
- SAUDI ARABIA**
Riyadh
Arabian Elect Ltd
Box 7354 Malaz
- VENEZUELA**
Caracas 101
E-Systems Inc
Parque Central
768-125
- EVANS & SUTHERLAND COMPUTER CORP**
580 Arapeen Dr
Salt Lake City, UT 84108
801-582-5847
Contact: Ted Naanes
■ Products & Services
Interactive systems

Branch Sales Offices:

CA Woodland Hills
Evans & Sutherland Computer Corp
21777 Ventura Blvd
213-340-5660

CA Mill Valley
Evans & Sutherland Computer Corp
655 Redwood Hwy
415-383-6377

GA Atlanta
Evans & Sutherland Computer Corp
2951 Flowers Rd S
404-458-1844

MI Southfield
Evans & Sutherland Computer Corp
29563 Northwestern Hwy
313-353-7447

NY Newtown
Evans & Sutherland Computer Corp
Brookwood Dr
203-426-2148

TX Dallas
Evans & Sutherland Computer Corp
7616 LBJ Frwy
214-386-4365

UT Salt Lake City
Evans & Sutherland Computer Corp
580 Arapen Dr
801-582-5847

GERMANY, WEST
Nordenstadt
Evans & Sutherland Computer Corp
Mecklenburger Str 42 6200
Wiesbaden
011-49 6122 4659

EX-CELL-O REMEX DIV

PO Box C-19533
Irvine, CA 92713
714-557-6860
Contact: William Walker
■ Products & Services
Disc drives, floppy
Tape, paper
Tape punch/reader, paper

Branch Sales Offices:

CO Englewood
Data Systems Mktg
14 Iverness Dr
303-770-1972

FL Orlando
Gentry Assoc
550 N Bumby
305-894-4401

GA Irvine
Ex-Cello-O Remex Div
1733 Alton St
714-557-6860

IL Rolling Meadows
S E A
1225 Carnegie St
312-255-4820

MA Southboro
Victor Assoc
304 Turnpike Rd
617-481-4010

MI Milford
Milford Scientific
Box 264
313-685-8912

NY Ridgewood NJ
Hansen Assoc
Box 806
201-652-7055

OH Dayton
Boco
333 W First St
513-224-0220

TX Houston
Data Marketing Assoc
3330 Bering Dr
713-780-2511

WA Seattle
Rush Drake
6133 Sieta Av S
206-763-2755

ENGLAND
Brentwood Middlesex
X-Data
24 Windmill Rd
01568-2088

GERMANY, WEST
Frankfurt
Noro-Micro
Victor-Slotosch Strasse 20
06194-3911

ITALY
Torino
Microtecnic
Casella Postale 210/Ferr

EXIDE ELECTRONICS POWER PRODUCTS

5 Penn Center
Philadelphia, PA 19103
215-972-8000
■ Products & Services
Power supplies, uninterruptible; line
correctors, etc.

EXPANDOR INC

400 St Claire Plaza
Pittsburgh, PA 15241
412-746-2910
Contact: Eugene R Yost
■ Products & Services
Line sharing units
Modem sharing units
Port sharing units
Acoustic couplers
Line drivers
Modems, limited distance
Modems, voice-grade, low-speed
MIL 188C adapters
EIA cable testers
Electrical-parameters test equipment
RTS emulator
Automatic answering units
Cables, electrical prefabricated extender
Code converters
Computer/communications interfaces
Data jacks and plugs
Modem eliminators
Protocol converters
Select. & transfer equip., patch. equip.
Select. & transfer equip., reconfig. equip.
Switches, data communications, manual

EXTTEL CORP.

3005 MacArthur Blvd
Northbrook, IL 60062
312-291-2550
Contact: James G Johnson
■ Products & Services
Tape punch/reader, paper
Intelligent (programmable) terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teletypewriters
Video data terminals (KSR)
Lease and resale organizations

Branch Sales Offices:

CA Los Angeles
Extel Corp
514 Shatto Pl
213-383-1101

GA Atlanta
Extel Corp
41 Marietta St NW
404-577-3848

MA Boston
Extel Corp
100 Summer St
617-482-1750

NY New York
Extel Corp
One World Trade Ctr
212-432-9180

TX The Woodlands
Extel Corp
2202 Timberlock Pl
713-367-7931

ONTARIO, CANADA
Markham
Extel Communications (Canada)
Ltd
113 Telson Av
416-495-1693

ENGLAND
Slough Berkshire
Transtel Communications Ltd
Mill St
44-753-26955

Want even more information
on products?
Turn to **UpDate Service Card,**
page 201.

FABRI-TEK INC

5901 S County Rd 18
Minneapolis, MN 55436
612-935-8811
Contact: John H Underwood
■ Products & Services
Add-on main memory

Branch Sales Offices:

CA San Jose
Fabri-Tek
408-246-8391

CA Hawthorne
Fabri-Tek
213-973-0484

IL Elk Grove
Fabri-Tek
312-843-2929

MA Auburndale
Fabri-Tek
617-969-5077

MN Minneapolis
Fabri-Tek
612-935-8811

FACIT INC

66 Field Point Rd
Greenwich, CT 06830
203-622-9150
Contact: Douglas Emore
■ Products & Services
Cassette drives
Tape, paper
Tape punch/reader, paper
Teleprinters, impact

Branch Sales Offices:

CA Los Angeles
Facit-Addo
5415 Jandy Pl
213-390-8502

CA Foster City
Facit-Addo
1167 Chess Dr
415-574-8225

IL Elmhurst
Facit-Addo
770 N Church Rd
312-834-8100

NJ Secaucus
Facit-Addo
501 Winsor Dr
201-866-5111

FAIRCHILD CAMERA & INSTRUMENT

464 Ellis St, MS 15-1034
Mountain View, CA 94042

415-962-5011

Contact: Geri Hadley

■ Products & Services

Electrical-parameters test equipment

Add-on main memory

Data security devices, encoder/decoders

Branch Sales Offices:

AL Huntsville
Fairchild
4717 University Dr NW
205-837-8960

AZ Phoenix
Fairchild
4414 N 19 Ave
602-264-4948

CA Encino
Fairchild
15760 Ventura Blvd
213-990-9800

CA Santa Ana
Fairchild
2101 E 4 St
714-558-1881

CA Santa Clara
Fairchild
3333 Bowers Ave
408-987-9530

FL Ft Lauderdale
Fairchild
1001 NW 62 St
305-771-0320

FL Altamonte Springs
Fairchild
303 Whooping Loop
305-834-7000

IL Rolling Meadows
Fairchild
60 Gould Center
312-640-1000

IN Ft Wayne
Fairchild
2118 Inwood Dr
219-483-6453

IN Indianapolis
Fairchild
7202 N Shadeland
317-849-5412

KS Overland Park
Fairchild
10875 Grandview
913-649-3974

MD Columbia
Fairchild
1000 Century Plaza
301-730-1510

MA Wellesley Hills
Fairchild
888 Worcester St
617-237-3400

MI Farmington Hills
Fairchild
20793 Farmington Rd
313-478-7400

MN Edina
Fairchild
7600 Parklawn Ave
612-835-3322

MS Jackson
Cartwright & Bean Inc
5150 Keele St
601-981-1368

MO Hazelwood
B C Electronic Sales Inc
300 Brookes Dr
314-731-1255

NV Carson City
Magna Sales
4560 Wagon Wheel Rd
702-883-0860

NJ Wayne
Fairchild
580 Valley Rd
201-696-7070

NM Albuquerque
Fairchild
2403 San Mateo NE
505-265-5601

NY Melville
Fairchild
275 Broadhollow Rd
516-293-2900

NY Poughkeepsie
Fairchild
19 Davis Ave
914-473-5730

NY Fairport
Fairchild
260 Perinton Hills Office Pk
716-223-7700

NC Charlotte
Cartwright & Bean Inc
1165 Commercial Ave
704-377-5673

NC Raleigh
Cartwright & Bean Inc
3948 Browning Pl
919-781-6560

OH Dayton
Fairchild
4812 Frederick Rd
513-278-8278

OK Tulsa
Technical Marketing
9717 E 42 St
918-622-5984

OR Beaverton
Fairchild Semiconductor
8285 SW Nimbus Ave
503-641-7871

PA Willow Grove
Fairchild
2500 Maryland Rd
215-657-2711

TN Memphis
Cartwright & Bean Inc
560 S Cooper St
901-276-4442

TN Knoxville
Cartwright & Bean Inc
8705 Unicorn Dr
615-693-7450

TX Dallas
Fairchild
13771 N Central Expwy
214-234-3391

TX Houston
Fairchild
6430 Hillcraft
713-771-3547

UT Salt Lake City
Simpson Assoc Inc
Box 151430
801-571-7877

WA Bellevue
Magna Sales Inc
300-120 Ave NE
206-455-3190

WI Wauwatosa
Larsen Assoc
10855 W Potter Rd
414-258-0629

QUEBEC, CANADA

Kirkland
R N Longman Sales Inc LSI
16891 Hymus Blvd
514-694-3911

FAIRCHILD SPACE & ELECTRONICS COMPANY

20301 Century Blvd
Germantown, MD 20767

301-428-6568

Contact: Dan Campbell

■ Products & Services

Earth stations

Data security devices, encoder/decoders

Satellite delay compensation units

FARADAY INC

805 S Maumee St
Tecumseh, MI 49286

517-423-2111

■ Products & Services

Fire Detection/Protection Equipment

FARINON ELECTRIC

1691 Bayport Ave
San Carlos, CA 94070

415-592-4120

Contact: D A Northen

■ Products & Services

Multiplexers, frequency division

Multiplexers, time division

Earth stations

Fiber optic systems

Microwave/Laser Systems, Private

Branch Sales Offices:

KS Overland Park
Farinon Electric
Box 4738
913-492-6776

NJ Bridgewater
Farinon Electric
Box 6802
201-469-6740

NC Graham
Farinon Electric
Box 389
919-226-0040

TX Houston
Farinon Electric
701 N Post Oak Rd
713-688-5560

QUEBEC, CANADA

Dorval
Farinon Canada
657 Orly Av
518-561-2640

AUSTRIA

Wein
Farinon GmbH
Diester Weggasse 29
85-95-04

FENWAL INC

400 Main St
Ashland, MA 01721

617-881-2000

Contact: John C Lowrey

■ Products & Services

Fire Detection/Protection Equipment

Branch Sales Offices:

CA Burlingame
Fenwal Inc
839 Mitten Rd
415-692-1080

GA Atlanta
Fenwal Inc
4700 Chamblee-Dunwoody Rd
404-457-7128

NJ Closter
Fenwal Inc
31 McCain Ct
201-768-1213

TX Houston
Fenwal Inc
4715 Strack Rd
713-440-7426

WI Marinette
Fenwal Inc
Stephenson Bank Bldg
715-732-0011

FIRE-LITE ALARMS INC
40 Albert St
New Haven, CT 06504
203-777-7861
Contact: Keith Kyle
■ Products & Services
Fire Detection/Protection Equipment

FIRST COMPUTER CORP
825 North Cass
Westmont, IL 60559
312-920-1050
Contact: Don Berteau
■ Products & Services
Minicomputers
DDP systems
Add-on main memory
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Digital plotters
Graphic display terminals
Remote line printers

FLORIDA DATA CORP
3308 New Haven Ave W
Melbourne, FL 32901
305-724-6088
Contact: M J Adkisson
■ Products & Services
Digital plotters
Remote line printers
Teleprinters, impact

Branch Sales Offices:
NH Salem
Florida Data Corp
Box 798
603-893-8200

NJ Medford
Florida Data Corp
Box 381
602-268-0600

FOUR-PHASE SYSTEMS INC
10700 N Deanza Blvd
Cupertino, CA 95014
408-255-0900
Contact: Claudia Heyman
■ Products & Services
DDP systems
Batch terminals
Intelligent (programmable) terminals
Interactive systems
Remote job entry terminals
Video data terminals (KSR)
Word processors, communicating
Data com. softw, distr. dp systems vend.
Data com. softw, intel. term. vendors

Branch Sales Offices:
CA El Segundo
Four-Phase Systems Inc
101 Continental Blvd
213-640-1438

CA Newport Beach
Four-Phase Systems Inc
4350 Von Karman
714-752-6656

CA San Bruno
Four-Phase Systems Inc
1150 Bayhill Dr
415-873-9073

CO Englewood
Four-Phase Systems Inc
Greenwood Plaza S; 5680 S
Syracuse Cir
303-770-7600

CT Avon
Four-Phase Systems Inc
20 Tower Ln; Avon Park S
203-678-0440

CT Stamford
Four-Phase Systems Inc
5 Landmark Sq
203-357-1860

DC Washington
Four-Phase Systems Inc
1850 'K' St NW
202-785-9222

FL Miami
Four-Phase Systems Inc
8375 NW 53 St
305-591-2374

GA Atlanta
Four-Phase Systems Inc
1888 Emery St NW
404-351-0070

IL Des Plaines
Four-Phase Systems Inc
1111 E Touhy Ave
312-298-9790

IL Chicago
Four-Phase Systems Inc
150 N Wacker Dr
312-558-9550

IN Indianapolis
Four-Phase Systems Inc
6321 La Pas Trail
317-298-9616

KS Overland Park
Four-Phase Systems Inc
9393 W 110 St
913-383-2750

MA Lexington
Four-Phase Systems Inc
33 Hayden Ave
617-861-9235

MI Southfield
Four-Phase Systems Inc
17117 W Nine Mile Rd
313-557-8844

MN Minneapolis
Four-Phase Systems Inc
3001 Metro Dr
612-854-4461

MO St Louis
Four-Phase Systems Inc
11500 Olive Blvd
314-569-2052

NJ Mount Laurel
Four-Phase Systems Inc
303 Fellowship Rd
609-234-0200

NJ Rochelle Park
Four-Phase Systems Inc
Mack Center 1; 365 W Passaic St
201-845-0252

NY New York
Four-Phase Systems Inc
1211 Ave of the Americas; Ninth
Fl
212-575-5656

NY New York
Four-Phase Systems Inc
61 Broadway; 21st Fl
212-480-8440

NY Syracuse
Four-Phase Systems Inc
The 500 Bldg; 500 S Salina St
315-422-4432

OH Cincinnati
Four-Phase Systems Inc
130 Tri County Pkwy
513-772-3220

OH Cleveland
Four-Phase Systems Inc
5755 Granger Rd
216-661-0720

TX Dallas
Four-Phase Systems Inc
2735 Villa Creek Dr
214-243-1173

TX Houston
Four-Phase Systems Inc
5373 W Alabama
713-961-4601

WA Kirkland
Four-Phase Systems Inc
10604 NE 38 Pl
206-827-9751

WI Wauwatosa
Four-Phase Systems Inc
2433 N. Mayfair Rd
414-476-5123

FRANKLIN ELECTRIC PROGRAMMED POWER

995 Benicia Ave
Sunnyvale, CA 94086
408-245-8900
Contact: L F Hovey
■ Products & Services
Electrical-parameters test equipment
Power supplies, uninterruptible; line
correctors, etc.

Branch Sales Offices:

AZ Tempe
Trembly Assoc
Box 27468
602-967-2058

CA Hayward
Advanced Technology Inc
26120 Eden Landing Rd
415-785-8346

CA Van Nuys
Gordon-Elliott Inc
13615 Victory Blvd
213-873-6862

CO Englewood
Data Specialties Inc
3602 S Jason
303-761-5763

CT Hamden
JBL
74 Terrace Ave
203-281-3161

IL Lockport
Computer Facilities Services
Group Inc
571 Rosanne Ln
815-838-3395

IA Iowa City
Dytec/Iowa
Box 2148
319-683-2282

MD Columbia
Tri-Tech Eng
9130 Red Branch Rd
301-995-0060

MA Holbrook
McLellan Assoc
63 Cedar Hill Rd
617-767-4771

MN St Paul
Dytec/North Inc
1821 University Ave 163-N
612-645-5816

- NM Albuquerque
Trembly Assoc
119 Quincy NE
505-266-8616
- NY DeWitt
dB Assoc
3307 Erie Blvd E
315-446-0220
- NY Great Neck
Measurement Technology Inc
159 Northern Blvd
212-895-7177
- OH Cleveland
Lax Assoc/North
18615 Detroit Ave
216-226-8815
- OH Cincinnati
Lax Assoc/South
230 Northland Blvd
513-771-4411
- OK Oklahoma City
Computer Power of Oklahoma
4307 N Walnut
405-521-1163
- OK Tulsa
Computer Power of Oklahoma
5462 S 94 E Ave
918-664-7874
- PA King of Prussia
J E Cuesta & Co
570 DeKalb Pike
215-265-5800
- PA Pittsburgh
Lax Assoc/East
Box 12613
412-833-5477
- WA Seattle
Escher Assoc
3109 NE 192 St
206-363-1193
- WI Milwaukee
The Christofferson Co Inc
7469 Lombardy Rd N
414-351-2090

FRANKLIN SYSTEMS CORP
733 Lakefield Rd
Westlake Village, CA 91361
805-496-1878
Contact: Frank W Peters
■ Products & Services
Concentrators
Front-end processors
Message switchers
Minicomputers
Remote network processors
Teletypewriters

Branch Sales Offices:

- CA Orinda
Franklin Systems Corp
115 Orinda Way
415-254-1744

If you know the name of the product, you can find out who makes it in the **Products & Services Directory, page 5.**

FTC COMMUNICATIONS INC
25 Broad St
New York, NY 10004
212-747-5670
Contact: Larry Gatti
■ Products & Services
International record carriers

GALILEO ELECTRO-OPTICS CORP
Galileo Park
Sturbridge, MA 01518
617-347-9191

- Contact: Kim Carpenter
■ Products & Services
Fiber optic systems
Cables, optical fiber
- Branch Sales Offices:**
- CA Alamo
Industrial Measurement & Control
205 Austin La
415-568-2000
- CA Long Beach
Saber Enterprises Inc
901 E 27th St
213-595-5646
- GA Atlanta
Beacon Electronic Associates
2285 Peachtree Rd NE
404-351-3654
- MA Needham Heights
Sturgeon Co
687 Highland Av
617-444-6603
- MA Planville
Teknis Inc
617-695-3591
- MI Brighton
SAI Marketing Corp
9880 E Grand River Av
313-227-1786
- MN Minnetonka
Clark R Gibb Co
11100 Bren Rd W
612-932-3950
- MO St Louis
Ensco-Rep Inc
11714 Lackland Industrial Dr
314-567-3935
- NJ Tenafly
Budd-Tronics Inc
256 Engle St
201-569-2230
- NM Albuquerque
Cleveland Enterprises Inc
124 Jackson St NE
505-266-5594
- NY East Syracuse
Fountain, Young & Co
6806 Newbrook Av
315-437-7733
- TX Richardson
R S Marston Co
1111 Floyd Rd
214-235-3577
- WA Seattle
ES/Chase Co
5950 6th Av S
206-762-4824

GAMMA TECHNOLOGY INC

2452 Embarcadero Way
Palo Alto, CA 94303
415-856-7421
Contact: Attn: VP Mktg
■ Products & Services
Minicomputers
Packet processors
Remote network processors
DDP systems
Interactive systems
Remote job entry terminals
Data security devices, softw. security mod.
Protocol converters
Data communications consultants
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.
Data com. softw, independ. softw houses

Branch Sales Offices:

- NETHERLANDS**
Amsterdam
SDT Data Technology BV IO
Postbus 254

SPAIN

Madrid
Hispano Electronica Information
sa
Aportado de Correos 48, Alcorcon

SWEDEN

Stockholm
AU System AB
Skeppargatan 48
08-6304-05

SWITZERLAND

Brugg
Interautomation AG
056-41-94-00

GANDALF DATA INC

1019 South Noel St
Wheeling, IL 60090
312-541-6060

Advertising page 51

Contact: Alan C Melkerson

- Products & Services
Front-end processors
Line sharing units
Message switchers
Modem sharing units
Multiplexers, time division
Multiplexers, intelligent
Port selectors
Port sharing units
Line drivers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Error rate detectors
Modem eliminators
Switches, data communications, automatic

Branch Sales Offices:

- AZ Phoenix
Zeus inc
546 East Portland
602-253-6101
- CA Poway
Gandalf Data Inc W
13035 Action Ave
714-748-0358
- CA Sherman Oaks
Electronic Marketing Specialists
13837 Ventura Blvd
213-990-4244
- FL Orlando
FM Associates Ltd
5018 Mortier Ave
305-851-5710
- HI Honolulu
Data Management
677 Ala Moana Blvd
808-531-5136
- MD Silver Spring
Gandalf Data Inc E
1113 Dryden St
301-593-0798
- MA Wakefield
IMF Sales Associates
18 Lakeside Office Pk
617-245-8900
- MN Edina
Rae Associates
6415 Limerick Dr
612-941-2693
- MO Hazelwood
Dytec South
320 Brooks Dr
314-731-5400
- MO Silver Springs
Terminal Networks
118 Elrid Dr
301-622-3535

MO Chesapeake City
Peripheral Sales
Box 36
301-885-5718

NJ Englewood
Tecnimat Inc
500 Grand Ave
201-569-4200

NY E Syracuse
Ossmann Instruments
6666 Old Collamer Rd
315-437-6666

OH Rocky River
ARC Associates
21330 Center Ridge
216-333-8375

TX Richardson
Data Applications
1300 E Arapaho
214-231-4846

WA Bellevue
Pacific Northwest Electronics
14264 Eastgate Way
206-641-6444

ONTARIO, CANADA
Ottawa
Gandalf Data Com
9 Slack Road
613-225-0565

GARYCO DATA SYSTEMS INC
1911 22 Ave S
Seattle, WA 98144
206-624-6076
Contact: Gary L Hasson
■ Products & Services
Minicomputers
Remote network processors
Data content monitors
EIA cable testers
Network management centers
DDP systems
Disc drives, floppy
Audio response units
Intelligent (programmable) terminals
Interactive systems
Teleprinters, impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Data communications consultants
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.
Data com. softw, intel. term. vendors

GATES ACOUSTINET INC
PO Box PP
Santa Rosa, CA 95403
707-584-7360
Contact: Jerome Gates
■ Products & Services
Furniture, cabinets, terminal enclosures

GATES ENERGY PRODUCTS INC
1050 S Broadway
Denver, CO 80217
303-744-4806
Contact: Tom Moore
■ Products & Services
Used equipment

Branch Sales Offices:

AZ Scottsdale
DAR-C Inc
14425 N Scottsdale
602-948-2240

CA Woodland Hills
Terry G Ng
5236 Baza Av
213-703-7844

IL Arlington Heights
James N Bailey
902 N Evergreen
312-398-5590

IN Indianapolis
France Enterprises Inc
10238 Bayton Ct
317-894-3172

MD Towson
William B MacLea
5 Lombardy Pl
301-321-0852

MA Maynard
Robert W Ojalehto
2 Walker St
617-897-6991

MN Minneapolis
HMR Inc
7200 France Av S
612-831-7400

MO Grandview
Harris-Hanson Co
12512 6 Third St
816-763-6200

NJ Somerville
Daniel H Pantiel
525 Brookside La
201-359-2019

OR Portland
C K Shanks & Assoc Inc
Box 25385
503-292-5656

TX Richardson
R F Kimball Co Inc
777 S Central Expy
214-231-3447

WA Seattle
C K Shanks & Assoc
4000 Aurora Ave N
206-632-4290

BRITISH COLUMBIA, CANADA
Vancouver
Canadian Dynamics Nova Ltd
8264 St George St
604-324-3116

ONTARIO, CANADA
Mississauga
Munro Electronic Components Ltd
7171 Torbram Rd C9
416-676-1042

ENGLAND
Cranleigh Surrey
Chloride-Gates Energy Ltd
Little Mead Ind Estate
011-44-04866-71181

For further catalog information, turn to **UpDate Service Card, page 201.**

GENERAL AUTOMATION
1055 S East St
Anaheim, CA 92805
714-778-4800
Contact: Bill Donohoo
■ Products & Services
Concentrators
Front-end processors
Message switchers
Minicomputers
Multiplexers, intelligent
Remote network processors
DDP systems
Cassette drives
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Tape punch/reader, paper
Batch terminals
Intelligent (programmable) terminals

Interactive systems
Remote job entry terminals
Teleprinters, impact
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.
Maintenance organizations

Branch Sales Offices:

AZ Scottsdale
General Automation
6900 E Camelback Rd
602-941-2749

CA Los Angeles
General Automation
9841 Airport Blvd
213-670-5900

CA San Francisco
General Automation
425 Battery St
415-398-2361

CA Sunnyvale
General Automation
306 Potrero Ave
408-245-6500

CA Santa Ana
General Automation
1900 E 4 St
714-972-8383

GA Atlanta
General Automation
2111 Powers Ferry Rd
404-955-8860

IL Bensenville
California GA Corp
1260 Mark St
312-860-4800

IN Indianapolis
General Automation
2346 S Lynhurst
317-248-0377

MD Hanover
General Automation
7225 Parkway Dr
301-796-7900

MA Waltham
General Automation
42 Weston St
617-899-8600

MI Farmington Hills
General Automation
24320 Indoplex Circle
313-478-2640

MI Grand Rapids
General Automation
2120 44 St SE
616-455-2000

MN Minneapolis
General Automation
7851 Metro Pkwy
612-854-0440

MO St Louis
General Automation
9346 Dielman Industrial Dr
314-997-1830

NJ Hasbrouck Heights
General Automation
377 Route 17
201-288-6560

NY New York
General Automation
One Penn Plaza
212-736-3737

NY Rochester
General Automation
411 Chile Ave
716-436-8030

NC Greensboro
General Automation
2216 W Meadowview
919-855-3410

OH Cincinnati
General Automation
4055 Executive Park Dr
513-563-0860

OH Rocky River
General Automation
20525 Center Ridge Rd
216-333-3544

PA Pittsburgh
General Automation
2 Parkway Center
412-921-3100

PA Plymouth Meeting
General Automation
1 Plymouth Meeting Plaza
215-825-6710

TX Dallas
General Automation
4232 Sigma Rd
214-661-5370

TX Houston
General Automation
8554 Katy Frwy
713-464-2815

WA Bellevue
General Automation
13401 Bellevue-Redmond Rd
206-747-0720

WI West Allis
General Automation
10201 West Lincoln Ave
414-321-1020

**GENERAL CABLE COMPANY
A DIV OF GK TECHNOLOGIES INC**

500 W Putnam Ave
Greenwich, CT 06830
203-661-0100
Contact: John Cavanaugh
■ Products & Services
Fiber optic systems
Cables, electrical prefabricated extender
Cables, optical fiber

Branch Sales Offices:

AL Huntsville
General Cable Co
4645 Commercial Dr NW
205-837-2561

CA Los Angeles
General Cable Co
6055 E Washington Blvd
213-721-1000

CO Denver
General Cable Co
7100 Broadway
303-428-8000

FL Tampa
General Cable Co
2902 East Sligh Av
813-236-5575

GA Atlanta
General Cable Co
2220 Parklake Dr
404-934-2080

HI Honolulu
General Cable Co
1035 Kikowaena Pl
808-839-0361

IL Monticello
General Cable Co
Box 152
217-762-2151

IL Des Plaines
General Cable Co
1701 Birchwood Av
312-297-1711

IN Indianapolis
General Cable Co
3003 E 96 St
317-844-4311

KS Mission
General Cable Co
Box 1063
913-677-5252

MD Stevensville
General Cable Co
Box 417
800-323-2309

NE Lincoln
General Cable Co
5625 "O" St
402-489-9371

NJ Woodbridge
General Cable Co
Box 700
201-636-5500

NY Scotia
General Cable Co
153 Willow La
518-399-7335

PA Erie
General Cable Co
2431 W Grandview Blvd
814-838-6536

PA Broomall
General Cable Co
600 Reed Rd
215-353-5455

TX Dallas
General Cable Co
Box 344040
214-620-0986

VA Richmond
General Cable Co
3113 W Marshall St
804-353-9970

WA Everett
General Cable Co
12414 Highway 99
206-353-5577

WI Cupertino
General Cable Co
20421 Stevens Creek Blvd
408-255-4082

GENERAL DATACOMM IND INC

1 Kennedy Ave
Danbury, CT 06810
203-797-0711

Advertising pages 56,57

Contact: Robert Smith

■ Products & Services

Concentrators

Multiplexers, frequency division

Multiplexers, time division

Multiplexers, intelligent

Multiplexers, group band

Line drivers

Modems, limited distance

Modems, multipoint

Modems, multipoint

Modems, voice-grade, low-speed

Modems, voice-grade, medium speed

Modems, voice-grade, high-speed

Network management centers

Tech control centers

Automatic calling units

Data access arrangement devices

Branch Sales Offices:

CA Canoga Pk
General Datacomm Industries Inc
7500 Irondale
213-887-1273

CA San Jose
General Datacomm Industries Inc
3047 Beckley Dr
408-274-5786

CA Santa Ana
General Datacomm Industries Inc
3609 W MacArthur Blvd
714-957-0244

CA Conoga Park
General Datacomm Ind Inc
7500 Irondale
213-998-3737

CA Piedmont
General Datacomm Ind Inc
205 Ricardo Ave
415-654-8508

CT N Granby
General Datacomm Ind Inc
283 Mountain Rd
203-653-4851

GA Atlanta
General Datacomm Industries Inc
6520 Powers Ferry Rd
404-955-0682

IL Des Plaines
General Datacomm Industries Inc
3150 Des Plaines Ave
312-298-4181

MO Kirkwood
General Datacomm Ind Inc
145 Horseshoe Dr
314-822-8787

NJ Roseland
General Datacomm Industries Inc
11 Crestview Ct
201-228-5530

NJ Ridgewood
General Datacomm Industries Inc
615 Franklin Tpke
201-445-5626

OH Brunswick
General Datacomm Ind Inc
221 Westchester
216-225-3736

PA Bensalem
General Datacomm Ind Inc
5722 Cavalier Ct
215-752-1033

TX Houston
General Datacomm Industries Inc
2630 Fountainview
713-780-1480

TX Dallas
General Datacomm Ind Inc
9719 Landward Cir
214-647-8344

VA Herndon
General Datacomm Ind Inc
1546 Coat Ridge Rd
703-573-1700

WA Everett
General Datacomm Ind Inc
5001 Graham Way
206-355-4929

**GENERAL ELECTRIC CO
DATA COMM PROD DEPT**

Waynesboro, VA 22980

703-942-8161

Advertising page Cover II

Contact: Clifford Rockwell

■ Products & Services

Remote network processors

Cassette drives

Disc drives, floppy

Tape, magnetic

Tape drives, magnetic

Tape punch/reader, paper

Batch terminals

Interactive systems

Remote line printers

Remote job entry terminals

Teleprinters, impact

Teletypewriters

Branch Sales Offices:

CA Sacramento
General Electric Co; Data Comm
Div
2160 Royale Rd
916-927-3638

CA El Monte
General Electric Co; Data Comm
Div
9350 E Flair Dr
213-572-5310

CA San Diego
General Electric Co; Data Comm
Div
2560 First Av
714-236-1266

CA San Leandro
General Electric Co; Data Comm
Div
2955 Merced St
415-436-9585

CO Denver
General Electric Co; Data Comm
Div
201 University Blvd
303-320-3023

CT Meriden
General Electric Co; Data Comm
Div
1 Prestige Dr
203-238-6800

FL Tampa
General Electric Co; Data Comm
Div
2106 South Lois Av
813-877-8311

GA Atlanta
General Electric Co; Data Comm
Div
270 Carpenter Dr NE
404-256-1966

IL Oak Brook
General Electric Co; Data Comm
Div
814 Commerce
312-986-3535

MD Rockville
General Electric Co; Data Comm
Div
301-770-4434

MA Wilmington
General Electric Co; Data Comm
Div
50 Fordham Rd
617-657-4800

MI Southfield
General Electric Co; Data Comm
Div
22255 Greenfield Rd
313-552-3061

MN Edina
General Electric Co; Data Comm
Div
7450 Metro Blvd
612-830-8260

MO St Louis
General Electric Co; Data Comm
Div
1970 Congressional Dr
314-423-8800

NJ Totowa
General Electric Co; Data Comm
Div
409 Minnisink Rd
201-256-4100

NJ Cherry Hill
General Electric Co; Data Comm
Div
1790 E Marlton Pike
215-241-5491

NY Syracuse
General Electric Co; Data Comm
Div
Electronics Pk
315-456-3319

NY New York
General Electric Company
International Sales Div; 570
Lexington Av
212-750-2000

OH Cincinnati
General Electric Co; Data Comm
Div
2621 Victory Pkwy
513-559-3597

OH Cleveland
General Electric Co; Data Comm
Div
1000 Lakeside Av
216-523-6262

PA Pittsburgh
General Electric Co; Data Comm
Div
300 Sixth Av Bldg
412-566-4116

TX Dallas
General Electric Co; Data Comm
Div
6350 LBJ Frwy
214-661-5137

TX Houston
General Electric Co; Data Comm
Div
4444 FM 1960 W
713-440-3580

WA Seattle
General Electric Co; Data Comm
Div
112 Andover Park E
206-575-2810

ALBERTA, CANADA
Calgary
Canadian General Electric Co Ltd
500-4th Ave SW
403-266-1553

BRITISH COLUMBIA, CANADA
Vancouver
Canadian General Electric Co Ltd
1177 W Hastings St
604-681-8136

ONTARIO, CANADA
Rexdale
Canadian General Electric Co Ltd
396 Attwell Dr
416-675-7500

QUEBEC, CANADA
Montreal
Canadian General Electric Co Ltd
2001 University Av
514-849-9491

AUSTRALIA
Ultimo NSW
Australian General Electric Ltd
86-90 Bay St
212-3711

ENGLAND
London
International General Electric
Company of New York Ltd
Park Lorne, 111 Park Rd
01-402-4100

FRANCE
Paris
General Electric Technical
Service Co
42 Avenue Montaigne
225-52-32

GERMANY, WEST
Frankfurt
General Electric Germany
Eschersheimer Landstrasse 60/62
0611-15641

ITALY
Milan
Compagnia Generale Di Eletticit 
Via Pergolesi 25
20-46-641

JAPAN
Tokyo
General Electric Japan Ltd
Tonichi Bldg; 6-2-31 Roppongi
Minato-ku
405-2920

SWEDEN
Solna
International General Electric
AB
Tritonvagen 27; Fack 17120
73-00-740

GENERAL ELECTRIC INFORMATION SERVICES

401 N Washington St
Rockville, MD 20850
301-340-4000
Contact: John A Kosta
■ Products & Services
Timesharing/service bureaus

Branch Sales Offices:

AL Birmingham
GE Information Services
2 Metroplex Dr

AK Anchorage
GE Information Services
517 W Northern Lights Blvd

AZ Phoenix
GE Information Services
3225 N Central Ave

CA San Francisco
GE Information Services
Two Embarcadero Ctr

CA Newport Beach
GE Information Services
4590 MacArthur Blvd

CA Los Angeles
GE Information Services
3550 Wilshire Blvd

CA Palo Alto
GE Information Services
1120 San Antonio Rd

CO Denver
GE Information Services
600 S Cherry St

CT E Hartford
GE Information Services
111 Founders Plaza

CT Stamford
GE Information Services
2777 Summer St

DC Washington
GE Information Services
1050 17 St NW

FL Miami
GE Information Services
One Biscayne Twr

FL Tampa
GE Information Services
4950 W Kennedy Blvd

GA Atlanta
GE Information Services
2200 Century Pkwy NE

IL Oakbrook
GE Information Services
2803 Butterfield Rd

IL Chicago
GE Information Services
233 S Wacker Dr

- IN Indianapolis
GE Information Services
8000 Knue Rd
- KY Louisville
GE Information Services
2100 Gardiner Ln
- LA New Orleans
GE Information Services
One Shell Sq
- MD Baltimore
GE Information Services
36 S Charles St
- MD Rockville
GE Information Services Co
401 N Washington St
- MA Boston
GE Information Services
1 Federal St
- MA Pittsfield
GE Information Services
1 Plastics Ave
- MI Grand Rapids
GE Information Services
2910 Lucerne Dr
- MI Dearborn
GE Information Services
1 Parklane Blvd
- MN Minneapolis
GE Information Services
1500 Lilac Dr S
- MO St Louis
GE Information Services
1015 Locust St
- MO Kansas City
GE Information Services
911 Maine St
- NE Omaha
GE Information Services
1730 1 Nat'l Cntr
- NJ E Orange
GE Information Services
33 Evergreen Pl
- NY New York
GE Information Services
1221 Ave of Americas
- NY Rochester
GE Information Services
1 Lincoln St
- NY Schenectady
GE Information Services
650 Franklin St
- NY Huntington
GE Information Services
1 Huntington Quad
- NY Buffalo
GE Information Services
5500 Main St
- NY Syracuse
GE Information Services
Bldg 2 Electronics Park
- NC Charlotte
GE Information Services
301 S McDowell
- NC Greensboro
GE Information Services
Northline Av Forum VI
- OH Cincinnati
GE Information Services
580 Walnut St
- OH Columbus
GE Information Services
100 Broad St
- OK Oklahoma
GE Information Services
2000 Classen Blvd
- OK Tulsa
GE Information Services
1900 4 Nat'l Bank Bldg
- OR Portland
GE Information Services
121 SW Salmon St
- PA Philadelphia
GE Information Services
3 Girard Plaza
- PA Pittsburgh
GE Information Services
2 Gateway Center
- PA Harrisburg
GE Information Services
5081 Stacy Dr E
- TN Nashville
GE Information Services
3200 West End Ave
- TX Dallas
GE Information Services
1341 N Mockingbird
- TX Houston
GE Information Services
601 Jefferson
- WA Seattle
GE Information Services
900 4th Ave
- WI Milwaukee
GE Information Services
615 E Michigan St
- PR Hata Rey
GE Information Services
Banco De Ponce Bldg
- ONTARIO, CANADA
Toronto ON
Canadian GE Co Ltd Information
Services
1420 Dupont St
- AUSTRALIA
North Sydney NSW 2060
GE Information Services Pty Ltd
124 Walker St
- AUSTRIA
A-1150 Wien
GE Informations-Services Ges mbH
Storchengasse 1
- BELGIUM
1040 Brussels
General Time Share SA
Avenue Des Arts 56
- DENMARK
1270 Kobenhavn K
OK Data
Gronningen 17
- ENGLAND
London WC1B 5AB
GEISCO Ltd
114-118 Southampton Row
- FINLAND
Opastinsilta 8 E; 00520 Helsinki
52
Oy Nokia AB Elektronikka
Time Sharing
Service; Laskentakeskus
- FRANCE
92080 Paris La Defense
GE Information Services SA
Tour Atlantique; Cedex 06
- GERMANY, WEST
5000 Koehn 41
GE Information Service GmbH
Luxemburger Strasse 299
- ITALY
20125-Milano
GE Information Services SpA
Via M Gioia 70
- JAPAN
Chuo-Ku
Information Services
Int'l-Dentsu Ltd
Kosan 2 Bldg; 1-7-13 Tsukiji
- MEXICO
Mexico 6
Tiempo Compartido SA
Paseo de la Reforma 300 12 piso
- NETHERLANDS
1014 BA Amsterdam
GE Information Services BV
Kabelweg 37
- NORWAY
Oslo 1
GE Information Services A/S
Roald Amundsens Gate 2; Postboks
1770 Vika
- SPAIN
Madrid
GE Information Services SA
Pedro Teixeira 8
- SWEDEN
S 171 54 Solna
GE Information Services AB
Vretenvagen 13
- GENERAL ELECTRIC — INSTAL &
SERV ENG
One River Rd, Bldg 2
Schenectady, NY 12345
518-385-1477
Contact: John Berrett
■ Products & Services
Maintenance organizations
Branch Sales Offices:
- AZ Phoenix
General Electric
5320 N 16 St
602-264-1751
- CA Sacramento
General Electric
2222 Sierra Blvd
916-929-0550
- CA San Francisco
General Electric
55 Hawthorne St
415-542-4336
- CA El Monte
General Electric
9350 E Flair Dr
213-572-5158
- CO Denver
General Electric
201 University Blvd
303-320-3089
- CT Meriden
General Electric
1 Prestige Dr
203-238-6800
- IL Oak Brook
General Electric
2015 Spring Rd
312-986-3500
- LA Harahan
General Electric
800 E Commerce Rd
504-831-5131
- MA Wellesley
General Electric
1 Washington St
617-237-2050
- MI Southfield
General Electric
22255 Greenfield Rd
313-552-3000
- MN Minneapolis
General Electric
1500 Lilac Dr S
612-542-0276
- MO St Louis
General Electric
1015 Locust St
314-342-7600

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

NJ Florham Park
General Electric
6 Vreeland Rd
201-822-3960

NY Buffalo
General Electric
2685 Walden Ave
716-686-2241

NY Syracuse
General Electric
3532 James St
315-456-7346

NY Albany
General Electric
15 Computer Dr
518-458-7811

NC Charlotte
General Electric
141 Providence Rd
704-371-3300

OH Cleveland
General Electric
1000 Lakeside Ave
216-523-6000

OH Cincinnati
General Electric
2621 Victory Pkwy
513-559-3500

OR Portland
General Electric
2929 NW 29 Ave
503-221-5060

PA Pittsburgh
General Electric
300 6 Ave Bldg
412-566-4124

PA Philadelphia
General Electric
3 Penn Center Plaza
215-241-5200

TX Houston
General Electric
4219 Richmond Ave
713-623-6440

VA Richmond
General Electric
1508 Willow Lawn Dr
804-288-4071

WA Seattle
General Electric
112 Andover Park E
206-575-2859

**GENERAL ELECTRIC —
INSTRUMENTATION &
COMMUNICATIONS EQUIP SERVICE**

One River Rd
Schenectady, NY 12345
518-385-0041
Advertising pages 163,165
Contact: John Currie
■ Products & Services
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Data content monitors
EIA cable testers
Electrical-parameters test equipment
Error rate detectors
Protocol analyzers
Response-time monitors
Network management centers
Tech control centers
Telecommunications monitor
Data entry terminals, portable
Digital plotters
Remote line printers
Remote job entry terminals
Teletypewriters
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)

**Lease and resale organizations
Maintenance organizations**

Branch Sales Offices:

AL Birmingham
237 Oxmoor Cir
205-925-9449

AL Mobile
721 Lakeside Dr
205-666-2364

AZ Phoenix
3840 W Claredon Ave
602-278-8515

AZ Tucson
1401 E Vanencia Rd
602-294-3139

CA Los Angeles
11223 S Hindry Ave
213-642-5317

CA Oakland
5555 East 14th St
415-436-9260

CA Sacramento
8516 Fruitridge Rd
916-383-1324

CO Denver
4900 Kingston St
303-320-3255

CT Plantsville
370 Atwater St
203-628-9638

FL Jacksonville
10 Van Dyck Dr
904-751-0615

FL Miami
540 NW 165 St
305-940-7723

GA Chamblee
3285 McGaw Dr
404-451-7236

IN Hammond
1138 164 Pl
219-933-4500

IN Indianapolis
1740 W Vermont St
317-639-1569

IN Ft Wayne
3830 Northrop Ave
219-484-9075

IN Evansville
401 N Congress Ave
812-479-0248

IA Eldridge
151 Fisher Ct
319-285-7501

KY Louisville
3900 Crittenden Dr
502-452-3311

LA New Orleans
1115 DeArmas St
504-367-6529

MD Baltimore
920 E Fort Ave
301-332-4710

MA Medford
3960 Mystic Valley Pkwy
617-396-9600

MI Riverview
18075 Krause Ave
313-285-6700

MN Minneapolis
2025 49 Ave
612-522-4396

MO Kansas City
3525 Gardner Ave
816-323-6362

MO St. Louis
12218 Manchester Rd
314-965-7115

NJ Fairfield
21 Madison Rd
201-227-7900

NJ Cherry Hill
1790 E Marlton Pike
609-424-4450

NY Tonawanda
175 Milens Rd
716-876-1200

NY Schenectady
1 River Rd
518-385-0398

NC Charlotte
4620 South Blvd
704-525-0311

ND Syracuse
1015 E Hiawatha Blvd
315-456-3382

OH Cincinnati
156 Circle Freeway Dr
513-874-8512

OH Cleveland
4477 E 49 St
216-883-1000

OH Toledo
405 Dearborn Ave
419-691-3501

OK Tulsa
5220 100 E Ave
918-252-1533

OR Portland
3259 NW 29 Ave
503-221-5101

PA West Mifflin
4930 Buttermilk Hollow Rd
412-462-7400

TN Knoxville
3109 Gov John Sevier Hwy
615-546-5121

TN Memphis
708 N Main St
901-527-3709

TX Dallas
2642 Andjon Dr
214-357-7341

TX Houston
8800 Wallisville Rd
713-672-3570

UT North Salt Lake
130 E 1100 N
801-973-2253

VA Richmond
1403 Ingram Ave
804-232-4576

WA Seattle
21034 84 Ave S
206-575-2987

WV Charleston
306 MacCorkle Ave SE
304-345-0920

WI Milwaukee
235 W Oklahoma Ave
414-744-0110

PR El Tuque
GE Reconstruction Industrial
Corp
Industrial Park
809-843-4225

ALBERTA, CANADA
Calgary
Canadian GE Co Ltd Dcp
3603 8 St SE
403-243-2202

BRITISH COLUMBIA, CANADA
Vancouver
Canadian GE Co Ltd Dcp
1177 W Hastings St
603-681-8136

ONTARIO, CANADA
Ottawa
Canadian GE Co Ltd Dcp
85 Albert St
613-236-5519

ONTARIO, CANADA

Rexdale
Canadian GE Co Ltd Dcp
396 Atwell Dr
416-675-7500

QUEBEC, CANADA

Montreal
Canadian GE Co Ltd Dcp
2001 University St
514-849-9491

GENERAL ELECTRIC — VIDEO DISPLAY

Electronics Park 6-206
Syracuse, NY 13221
315-456-2562
Contact: J P Gundersen
■ Products & Services
Video data terminals (RO)

GENERAL TELEPHONE CO OF CALIFORNIA

100 Wilshire Blvd
Santa Monica, CA 90406
213-393-9311
Contact: Stewart W Phillips
■ Products & Services
Telephone companies
Modems, multipoint
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Add-on main memory
Remote job entry terminals
Teleprinters, non-impact

GENERAL TELEPHONE CO OF KENTUCKY

Box 1650
Lexington, KY 40592
606-253-4000
Contact: Dorothy Schremser
■ Products & Services
Telephone companies
Acoustic couplers
Line drivers
Modems, limited distance
Modems, multipoint
Modems, multipoint
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Modems, wideband, half-group band
Modems, wideband, group band
Tech control centers
Tape, magnetic
Tape, paper
Tape punch/reader, paper
Batch terminals
Intelligent (programmable) terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Video data terminals (KSR)
Video data terminals (RO)
Automatic answering units
Automatic calling units
Data access arrangement devices
Data jacks and plugs
Furniture, cabinets, terminal enclosures
Modem eliminators
Data communications consultants

Branch Sales Offices:

KY Lexington
General Telephone of Kentucky
3358 Tates Creek Rd
606-268-9111

KY Ashland
General Telephone of Kentucky
619 15 St
606-329-1333

KY Elizabethtown
General Telephone of Kentucky
Box 10
502-737-3011

GENERAL TELEPHONE CO. OF THE SOUTHWEST

2701 Johnson St
San Angelo, TX 76901
915-944-5511
Contact: Joe H Collyns
■ Products & Services
Telephone companies
Computerized branch exchange (CBX)
Modems, limited distance
Modems, multipoint
Modems, multipoint
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Disc drives, floppy
Tape drives, magnetic
Data entry terminals, portable
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters

Branch Sales Offices:

TX Carrollton
General Telephone Co of SW
1001 W 3
214-453-8810

TX Dallas/Fort Worth
General Telephone Co of SW
International Pkwy
214-574-5353

TX Baytown
General Telephone Co of SW
8200 N Main
713-427-7421

TX San Angelo
General Telephone Co of SW
3425 Chadborne
915-655-0558

TX Texarkana
General Telephone Co of SW
1600 Waterall
214-794-2511

TX Brownfield
General Telephone Co of SW
614 W Tate
806-637-7571

TX Bryan
General Telephone Co of SW
501 Industrial
713-779-4748

Stay up-to-date with new catalog information and new product announcements. Turn to **UpDate Service Card, page 201.**

GENERAL TELEPHONE CO OF WISCONSIN

PO Box 49
Sun Prairie, WI 53590
608-837-1211
Contact: Robert I Barnes
■ Products & Services
Telephone companies
Computerized branch exchange (CBX)
Modems, limited distance
Modems, multipoint
Disc drives, floppy
Tape, magnetic

Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Data access arrangement devices
Switches, data communications, manual

Branch Sales Offices:

WI Wausau
General Telephone Co of Wisconsin
413 McClellan
715-847-1255

WI Plymouth
General Telephone Co of Wisconsin
414-893-7375

WI Sun Prairie
General Telephone Co of Wisconsin
463 Broadway
608-837-1835

GENISCO COMPUTERS

17805 Sky Park Cir
Irvine, CA 92714
714-556-4916
Contact: John Fletcher
■ Products & Services
Graphic display terminals

Branch Sales Offices:

AZ Phoenix
Industrial Products Corp
Box 10124
602-246-8487

CA San Diego
Moxon Electronics
9580 Black Mountain Rd
714-578-5760

CA Santa Clara
Moxon Electronics
2376 Walsh Rd
408-249-2491

CO Englewood
Data Systems Marketing
14 Inverness Drive E
303-770-1972

FL Orlando
Technical Assoc
Box 20693
305-894-7531

GA Atlanta
Technical Assoc
Box 47853
404-457-1645

MD Rockville
L G White & Co
12111 Parklawn Dr
301-792-0660

MA Lowell
S & S Elect
80 Stedman St
617-459-2578

MI Milford
Milford Scientific
203 Union St
313-685-8912

NJ Ridgwood
Hansen Assoc
Box 806
201-652-7055

NM Albuquerque
Industrial Products Corp
418 Louisiana SE
505-256-3561

NY Saratoga Springs
S & S Elect
77 Van Dam St
518-587-2313

OH Dayton
Boco
333 W 1 St
513-224-0220

OR Hillsboro
Data Systems Marketing
910 NW Brookwood
503-640-4883

PA Bryn Mawr
Hopkins Assoc
Box 829
215-527-4086

SC Spartanburg
Technical Assoc
Box 1983
803-579-2904

TX Dallas
Remtek
13500 Midway Rd
214-287-2855

UT Salt Lake City
Data Systems Marketing
1864 S State St
801-487-8281

WA Kirkland
Data Systems Marketing
1371/2 Commercial Ave
206-827-0402

BRITISH COLUMBIA, CANADA
Dorval
Datamex
785 Lajoie Ave
514-636-9774

BRITISH COLUMBIA, CANADA
Vancouver
Datamex
890 W Pender St
604-684-8625

ONTARIO, CANADA
Toronto
Datamex
14 Leswyn Rd
416-787-1208

ONTARIO, CANADA
Ottawa
Datamex
1750 Courtwood Crescent
613-224-1391

AUSTRALIA
New So Wales
Datamatics
90 Alexander St
433-333

ENGLAND
Worthing, W Sussex
Applied Dynamics
Crescent Rd
0903-31032

ISRAEL
Tel Aviv
Information Systems Ltd
6 Reiness St
03-228174

GENRAD
300 Baker Ave; Mail Station 11
Concord, MA 01742
617-369-8770
Contact: Donald W Kerr
■ Products & Services
Electrical-parameters test equipment

GLENAYRE ELECTRONICS
1551 Columbia St
North Vancouver, BC V7J1A3
604-980-6041
Contact: Doran McMullin
■ Products & Services
Specialized carriers
Telephone companies
Minicomputers
Modems, multipoint
Network management centers
Automatic calling units

Branch Sales Offices:

TX Dallas
Glenayre Electronics Inc

WA Blaine
Glenayre Electronics Inc
8 12 St
206-285-0470

WA Kent
Glenayre Electronics Inc
Box 3279
206-941-7362

GNAT COMPUTERS, INC.
7895 Convoy Court—Bldg. 6
San Diego, CA 92111
714-560-0433
Contact: Frank Adams
■ Products & Services
Front-end processors
Disc drives, floppy
Intelligent (programmable) terminals
Computer/communications interfaces
Data security devices, personal ident. sys.

Branch Sales Offices:

CA Pasadena
Gnat Computers Inc
110 S Euclid Ave
213-681-3451

NM Albuquerque
Gnat Computers Inc
11910 Central SE
505-292-3330

NC Charlotte
Gnat Computers Inc
3733 Monroe Rd
704-333-7743

GOULD INC, BIOMATION DIV
4600 Old Ironsides Dr
Santa Clara, CA 95050
408-988-6800
Contact: Ed Jacklitch
■ Products & Services
Electrical-parameters test equipment

Branch Sales Offices:

AL Huntsville
W A Brown Inst Inc
Box 4560
205-883-8660

AZ Scottsdale
BFA Corp
4426 N Saddlebag Tr
602-994-5400

CA Rodondo Beach
Ward/Davis Aassoc
2615 Manhattan Bch Blvd
213-973-7772

CA Santa Clara
Ward/Davis Aassoc
3329 Kifer Rd
408-245-3700

CA San Diego
Ward/Davis Aassoc
2333 Camino del Rio
714-298-8912

CO Denver
BFA Corp
12015 E 46 St
303-371-2422

CT Hamden
Pat Jenks Assoc
2315 Whitney Av
203-281-0810

FL Orlando
W A Brown Inst Inc
Box 513
305-425-5505

FL Ft Lauderdale
W A Brown Inst Inc
961 NW 453 St
305-776-4800

FL Melbourne
W A Brown Inst Inc
Box 1406
305-723-0766

GA Atlanta
W A Brown Inst Inc
3070 Presidential Dr
404-939-1674

IL Chicago
Comtel/Pivan
3535 W Peterson Av
312-539-4838

IN Indianapolis
Comtel/Pivan
1259 W 86 St
317-253-1681

IA Cedar Rapids
Comtel/Pivan
204 Collings Rd NE
319-377-9434

KS Shawnee Mission
Comtel/Pivan
5920 Nall
913-722-1030

MA Wakefield
Pat Jenks Assoc
591 North Av
617-246-1590

MN Minneapolis
Comtel/Pivan
5100 Edina Ind Blvd
612-835-3060

MO St Louis
Comtel/Pivan
11734 Lackland Ind Dr
314-567-3636

NM Albuquerque
BFA Corp
3705 Westerfield NE
505-292-1212

NM Las Cruces
BFA Corp
Box 1237
505-523-0601

NM Albuquerque
Charles W Fowler Co
Box 5396
505-299-7676

NY DeWitt
D B Associates
Box 14
315-446-0220

NY Port Chester
Radiation Electronics
Box 564
914-937-2300

NC Durham
W A Brown Inst Inc
123 1/2 Orange St
919-683-1580

OH Strongsville
Biomation
9985 Prospect Rd
216-888-2800

OH Cincinnati
Biomation
995 Harrogate Ct
513-351-2800

OR Beaverton
Showalter Instruments Inc
3800 SW Cedar Hills Blvd
503-644-9164

PA Bensalem
Eastern Instrumentation
Street Rd & Bristol Pike
215-245-6660

SC Columbia
W A Brown Inst Inc
1201 St Andrews Rd
803-798-3297

- TN Oak Ridge
W A Brown Inst Inc
733 Emory Valley Rd
615-482-5761
- TX Dallas
Crockett Southwest Co
Box 47287
214-251-1776
- TX Austin
Crockett Southwest Co
Box 5587
512-451-8269
- TX Houston
Crockett Southwest Co
Box 94089
713-937-1836
- UT Salt Lake City
BFA Corporation
395 Lawdale Dr
801-466-6522
- VA McLean
Creative Marketing Assoc
6845 Elm St
703-893-6612
- WA Bellevue
Showalter Instruments Inc
1521 130th Av NE
206-455-4922
- WA Richland
Showalter Instruments Inc
1210 Mahan
509-943-5288
- WI Brookfield
Pivan Eng Co
3055 N Brookfield Rd
414-786-1940
- BRITISH COLUMBIA, CANADA**
Vancouver
Radionics Ltd
2182 W 12 Av
604-732-7317
- MANITOBA, CANADA**
Winnipeg
Radionics Ltd
Box 812
204-475-1732
- ONTARIO, CANADA**
Ottawa
Radionics Ltd
2487 Kaladar Av
613-521-8251
- IL Schaumburg
Graphic Controls;Coated Prod Div
1016 Gloucester Harbor
312-980-9490
- MD College Pk
Graphic Controls;Coated Prod Div
Box 410
301-779-0598
- MA Accord
Graphic Controls;Coated Prod Div
Box 119
800-828-7978
- MI Farmingdale
Graphic Controls;Coated Prod Div
29226 Orchard Rd
800-828-7978
- MO Blue Springs
Graphic Controls;Coated Prod Div
1700 S 22 St
816-229-1077
- NY Pt Washington
Graphic Controls;Coated Prod Div
9 Durban St
800-462-7332
- TX Richardson
Graphic Controls;Coated Prod Div
777 S Central Exprwy
214-235-1237
- GRAPHIC SCIENCES INC**
Commerce Park; Corporate Dr
Danbury, CT 06810
203-792-6000 X 230
Contact: David Eaton
■ Products & Services
Facsimile terminals
Branch Sales Offices:
- AZ Tempe
Graphic Sciences Inc
2125 S 48 St
602-968-8569
- CA Los Angeles
Graphic Sciences Inc
8939 S Sepulveda Blvd
213-776-1445
- CA Santa Ana
Graphic Sciences Inc
505 N Tustin Ave
714-973-4611
- CA San Diego
Graphic Sciences Inc
1461 Camino Del Rio S
714-299-4889
- CA San Mateo
Graphic Sciences Inc
800 S Claremont St
415-342-5921
- CO Lakewood
Graphic Sciences Inc
10125 W 6 Ave
303-232-9371
- CT Danbury
Graphic Sciences Inc
1 Padanaram Rd
203-792-3901
- DC Alexandria
Graphic Sciences Inc
6121 Lincolnia Rd
703-256-8920
- FL Miami
Graphic Sciences Inc
8600 NW 53 Ter
305-592-9946
- FL Tampa
Graphic Sciences Inc
5426 W Bay Center St
813-870-1438
- GA Atlanta
Graphic Sciences Inc
3301 Buckeye Rd NE
404-451-4241
- IL Oak Brook
Graphic Sciences Inc
2625 Butterfield Rd
312-920-7170
- MA Wellesley Hills
Graphic Sciences Inc
40 Washington St
617-237-3485
- MI Troy
Graphic Sciences Inc
500 Stephenson Hwy
313-588-9300
- MN Minneapolis
Graphic Sciences Inc
8030 Cedar Ave
612-854-4722
- MO Overland Park
Graphic Sciences Inc
6405 Metcalf
913-677-5995
- MO St Louis
Graphic Sciences Inc
8630 Delmar Blvd
314-997-2700
- NJ Union
Graphic Sciences Inc
1620 Rt 22
201-687-3522
- NY Buffalo
Graphic Sciences Inc
69 Delaware
716-856-0795
- NY Huntington Sta
Graphic Sciences Inc
1 Huntington Quad
516-420-0100
- NY New York
Graphic Sciences Inc
576 Fifth Ave
212-245-5905
- NC Charlotte
Graphic Sciences Inc
4822 Albemarle Rd
704-536-8164
- OH Cincinnati
Graphic Sciences Inc
9403 Kenwood Rd
513-984-2903
- OH Beachwood
Graphic Sciences Inc
23611 Chargin Blvd
216-831-0001
- PA Broomall
Graphic Sciences Inc
390 Reed Rd
215-544-6900
- PA Pittsburgh
Graphic Sciences Inc
Manor Oak Two; 1910 Cochran Rd
412-343-9466
- TX Dallas
Graphic Sciences Inc
2735 Villa Creek Dr
214-247-6218
- TX Houston
Graphic Sciences Inc
10606 Hempstead Hwy
713-688-6809
- WA Bellevue
Graphic Sciences Inc
12727 Northrup Way
206-883-2555
- GRAPHNET INC**
329 Alfred Ave
Teaneck, NJ 07666
201-569-7711
Contact: Ms Gail Delagada
■ Products & Services
Facsimile-service carriers
Message (including telegraph) carriers

Want to receive announcements of new products?
Turn to **UpDate Service Card, page 201.**

GRAPHIC CONTROLS
COATED PROD DIV
189 Van Rensselaer St
Buffalo, NY 14240
716-853-7500
Advertising page 155
Contact: Gilbert Te Winkle
■ Products & Services
Paper for terminals
Branch Sales Offices:

CA Atlanta
Graphic Controls;Coated Prod Div
2601 Flowers Rd
404-451-4738

CA Irvine
Graphic Controls;Coated Prod Div
17819 Gillette St
714-540-8313

CA Santa Clara
Graphic Controls;Coated Prod Div
3105 El Camino Real
408-241-7960

Packet-switching carriers
Value-added carriers

Branch Sales Offices:

- CA San Francisco
Graphnet Inc
1750 Montgomery St
415-434-1537
- DC Washington
Graphnet Inc
1835 K St NW
202-659-0400
- IL Oak Brook
Graphnet Inc
2805 Butterfield Rd
312-655-0078
- MI Oak Park
Graphnet Inc
10450 W 9 Mile Rd
313-541-4337
- NY New York
Graphnet Inc
11 Broadway
212-943-0660

GRINNELL FIRE PROTECTION SYSTEMS CO

10 Dorrance St
Providence, RI 02903
401-456-5600
Contact: Joe Riley
■ Products & Services
Fire Detection/Protection Equipment

GRUMMAN DATA SYSTEMS CORP

1111 Stewart Ave
Bethpage, NY 11714
516-575-6200
Contact: John Mulry
■ Products & Services
Data communications consultants
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.
Data com. softw, independ. softw houses
Data com. softw, intel. term. vendors
Maintenance organizations
Timesharing/service bureaus

Branch Sales Offices:

- CA Encino
Grumman Data Sytems Corp
16133 Ventura Blvd
213-986-3570
- MA Boston
Grumman Data Sytems Corp
100 Summer St
617-423-6787
- VA Arlington
Grumman Data Sytems Corp
1800 N Kent St
703-522-2047

GTE LENKURT INC

1105 County Rd
San Carlos, CA 94070
415-595-3000
Contact: R O Smeland
■ Products & Services
Message (including telegraph) carriers
Satellite carriers
Specialized carriers
Telephone companies
Multiplexers, frequency division
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Modems, wideband, group band
MIL 188C adapters

Branch Sales Offices:

- CA San Carlos
GTE Lenkurt Inc
1105 County Rd
415-595-3000

GA Atlanta
GTE Lenkurt Inc
361 E Paces Ferry Rd NE
404-261-8282

IL Arlington Heights
GTE Lenkurt Inc
120 W Eastman St
312-398-6700

TX Dallas
GTE Lenkurt Inc
8609 Northwest Plaza Dr
214-363-0286

VA Springfield
GTE Lenkurt Inc
7950 Woodruff Court
703-321-8560

GTE TELENET COMMUNICATIONS CORP

8330 Old Courthouse Rd
Vienna, VA 21180
703-827-9200

Advertising pages 18,19
Contact: Ralph Johnson
■ Products & Services
Packet-switching carriers
Value-added carriers
Concentrators
Message switchers
Minicomputers
Multiplexers, intelligent
Packet processors
Remote network processors
Network management centers
Tech control centers
DDP systems
Computer/communications interfaces
Data security devices, personal ident. sys.
Protocol converters
Switches, data communications, automatic

Branch Sales Offices:

- CA Garden Grove
GTE Telenet Commun Corp
12832 Valley View
714-891-4481
- CA Cupertino
GTE Telenet Commun Corp
20370 Town Center Ln
408-255-6450
- IL Chicago
GTE Telenet Commun Corp
200 West Monroe St
312-782-6119
- MA Waltham
GTE Telenet Commun Corp
400-2 Totten Pond Rd
617-890-0202
- MI Ann Arbor
GTE Telenet Commun Corp
281 E Liberty Plaza
313-665-3132
- NJ Marlton
GTE Telenet Commun Corp
2001A Greentree
609-983-9600
- NY New York
GTE Telenet Commun Corp
One Penn Plaza
212-594-6644
- TX Houston
GTE Telenet Commun Corp
5100 Westheimer
713-871-1243
- VA Arlington
GTE Telenet Commun Corp
1800 N Kent St
703-243-7510

HALCYON

2121 Zanker Rd
San Jose, CA 95131
408-293-9970

Advertising pages 92,93

Contact: Charles Volkland

■ Products & Services
Multiplexers, time division
Multiplexers, intelligent
Data content monitors
EIA cable testers
Electrical-parameters test equipment
Protocol analyzers
Response-time monitors

Branch Sales Offices:

- CA Los Gatos
J Lawless
985 University Av
408-356-6136
- GA Atlanta
R Davis
32 Perimeter Center
404-394-3730
- IL Oak Brook
F Mandarino
2021 Spring Rd
312-325-8171
- NJ Piscataway
M Tesoriere
255 Old New Brunswick Rd
201-981-0650
- TX Fort Worth
R Wylie
4545 Bellaire Dr S
817-732-1851
- GERMANY, WEST
Munich
G Kafka
Rosenheimerstrasse 34
089-483400

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

HAMILTON SORTER COMPANY INC

3158 Production Dr
Fairfield, OH 45014
513-874-9498
Contact: Gordon Kwiecinski
■ Products & Services
Furniture, cabinets, terminal enclosures

HANDS-ON TERMINALS INC

3743 SE 21 St
Portland, OR 97202
503-231-1057
Contact: Attn: VP Mktg
■ Products & Services
Port sharing units
Acoustic couplers
Modems, voice-grade, low-speed
Disc drives, floppy
Intelligent (programmable) terminals
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Paper for terminals
Protocol converters
Data com. softw, intel. term. vendors
Lease and resale organizations
Maintenance organizations

HARRIS CORP
COMPUTER SYSTEMS DIV

2101 W Cypress Creek Rd
Fort Lauderdale, FL 33309
305-974-1700
Contact: David Soule

**HARRIS CORP
CONTROLS DIV**

Box 430
Melbourne, FL 32901
305-727-5700
Contact: Roy C Owen Jr

**HARRIS CORP
DATA COMMUNICATIONS DIV**
16001 Dallas Parkway; PO Box 400010
Dallas, TX 75240
214-386-2000
Contact: Elliott James

**HARRIS CORP
COMPOSITION SYSTEMS DIV**
Rodes Blvd Box 2080
Melbourne, FL 32901
305-259-2900
Contact: Sheridan Skogen

**HARRIS CORP
FIBER OPTIC SYSTEMS**
PO Box 37
Melbourne, FL 32901
305-724-3556
Contact: Richard Stackhouse
■ Products & Services
DDP systems
Multiplexers, time division
Modems, voice-grade, low-speed
Voice digitizers
DDP systems
Batch terminals
Intelligent (programmable) terminals
Interactive systems
Remote job entry terminals
Video data terminals (KSR)
Tape, magnetic
Tape punch/reader, paper
Remote job entry terminals
Terminal controllers
Video data terminals (RO)
Word processors, communicating
Fiber optic systems

Branch Sales Offices:

AZ Phoenix
Harris Computer Systems Div
2942 N 24 St
CA San Mateo
Harris Computer Systems Div
1660 S Amphlett Blvd
CA Newport Beach
Harris Computer Systems Div
1400 Quail St
CA Culver City
Harris Computer Systems Div
59 Green Valley Cir
CA San Diego
Harris Computer Systems Div
7801 Mission Center Ct
CO Englewood
Harris Computer Systems Div
5660 S Syracuse Cir
DC Washington
Harris Computer Systems Div
2600 Virginia Ave NW
FL Ft Lauderdale
Harris Computer Systems Div
1200 Gateway Dr
FL Palm Bay
Harris Computer Systems Div
60 Woodlake Dr W
GA Atlanta
Harris Computer Systems Div
875 Johnson Ferry Rd NE
IL Des Plaines
Harris Computer Systems Div
3166 Des Plaines Ave

KS Shawnee Mission
Harris Computer Systems Div
6811 West 63
MA Wellesley
Harris Computer Systems Div
60 Walnut St
MN Bloomington
Harris Computer Systems Div
2850 Metro Dr
MO Brentwood
Harris Computer Systems Div
1750 Brentwood Blvd
NJ Bloomfield
Harris Computer Systems Div
400 Broad Acres Dr
NJ Cherry Hill
Harris Computer Systems Div
800 Kings Hwy
NY New York
Harris Computer Systems Div
675 Third Ave
NC Raleigh
Harris Computer Systems Div
3000 Highwoods Blvd
OH Euclid
Harris Computer Systems Div
26250 Euclid Ave
PA Pittsburgh
Harris Computer Systems Div
875 Greentree Rd
TX Dallas
Harris Computer Systems Div
Box 400010
TX Houston
Harris Computer Systems Div
7000 Regency Sq Blvd
WA Bellevue
Harris Computer Systems Div
10800 NE 8 St
CA Culver City
Composition Systems Div
5839 Green Vally Cir
213-641-5032
IL Arlington Heights
Composition Systems Div
571 West Golf Rd
312-640-7850
NY New York
Composition Systems Div
675 Third Ave
212-986-7600
CA Santa Cruz
Harris Fiber Optic Systems
325 Plateau Ave
408-425-0185
CO Longmont
Harris Fiber Optic Systems
Box 906
MN Hastings
Harris Fiber Optic Systems
1332 W 23 St
612-437-7101

HAWAIIAN TELEPHONE CO

PO Box 2200
Honolulu, HI 96841
808-546-3000
Contact: Jack H Phares
■ Products & Services
Telephone companies
Computerized branch exchange (CBX)
Concentrators
Line sharing units
Message switchers
Modem sharing units
Multiplexers, frequency division
Multiplexers, time division
Multiplexers, intelligent
Packet processors
Port sharing units
Remote network processors

Acoustic couplers
Microwave/Laser Systems, Private
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Modems, wideband, half-group band
Modems, wideband, group band
MIL 188C adapters
Batch terminals
Data entry terminals, portable
Interactive systems
Teleprinters, impact
Teleprinters, non-impact
Telescriber
Teletypewriters
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)
Automatic answering units
Automatic calling units
Cables, electrical prefabricated extender
Code converters
Computer/communications interfaces
Data access arrangement devices
Data jacks and plugs
Furniture, cabinets, terminal enclosures
Protocol converters
Select. & transfer equip., patch. equip.
Switches, data communications, automatic
Switches, data communications, manual
Data communications consultants
Lease and resale organizations
Maintenance organizations

HAZELTINE CORP

284 E Pulaski Rd
Greenlawn, NY 11740
516-549-8800
Contact: John A Sasso
■ Products & Services
Videp data terminals (KSR)

Branch Sales Offices:

CA Burlingame
Hazeltine Corp
433 Airport Blvd
415-342-6070
CA Century City
Hazeltine Corp
1801 Ave of Stars
213-553-1811
GA Atlanta
Hazeltine Corp
1945 The Exchange
404-952-8444
IL Oakbrook
Hazeltine Corp
800 Enterprise Dr
312-986-1414
NJ Flanders
Hazeltine Corp
169 Rt 296
201-584-4661
NY New York
Hazeltine Corp
1270 Av of Americas
212-586-1970
TX Dallas
Hazeltine Corp
7616 LBJ Freeway
214-980-9825
VA Arlington
Hazeltine Corp
2001 Jefferson Davis Hwy
703-979-5500

ONTARIO, CANADA

Mississauga
Data Terminal Mart
7520 Bath Rd
416-677-0184

AUSTRALIA

North Sydney
Australian Datronics Ltd
7-9 West St
2-920 384

AUSTRIA

Vienna
Neue Organisationsmaschinen
Gesellschaft (NOG)
Untere Donavstrasse 13-15
222 248 414

BELGIUM

Brussels
Geveke Electronics
Anatole Francestraat 119/121
2 241 4550

CHILE

Santiago
Sociedad Nacional de
Procesamiento de Datos (SONDA)
Teatinos 554
2 62277

DENMARK

Koge
Trend Electronics
Tangmosevej 99
3 652 345

ENGLAND

Richmond Surrey
Hazeltine Ltd
Terminal House, 14 Petersham Rd
01-948-3111

FRANCE

Montrouge
Geveke Electronique SA
85-87 Avenue Jean-Jaures
1 654 1582

GERMANY, WEST

Duesseldorf
Geveke Elektronik GmbH
Schlaegelstrasse 9
211 773 082

HONG KONG

Hong Kong
Oriental Data Systems Ltd
Harcourt Rd
5 243 121

ISRAEL

Tel Aviv
KDM Electronics Ltd
14 Karlibach St
3 266 291

ITALY

Milano
SEGI SRL
Via Timavo 12
2.60.73.255

JAPAN

Tokyo
Protech Inc
7-22-43 Nishi-Shinjuku
3 365 0751

MEXICO

Mexico
Industrias Digitales SA
Plateros No 7-116
905-524-5132

NETHERLANDS

Amsterdam
Geveke Electronica BV
Kabelweg 25
20 802 802

NEW ZEALAND

Wellington
CBL Datacomm
89 Courtenay Pl
4-857-939

NORWAY

Oslo
Alf G Johnsen A/S
Brenneriveien 11
2-111-250

SPAIN

Barcelona
Infotecnos SA
Paris 46-48
3 322 0303

SWITZERLAND

Bern
Interrest AG
Aarberggasse 46
31 224 481

TAIWAN

Taipei
Multitech International Corp
977 Min Shen E Rd
2 768 1232

HEATH CO

Hill Top Road
Benton Harbor, MI 49022
616-982-3411
Contact: Mr Coy Clements
■ Products & Services
Discs, floppy
Intelligent (programmable) terminals
Teleprinters, impact
Word processors, communicating

Branch Sales Offices:

AZ Phoenix
Heath Co
2727 W Indian School Rd
602-279-6247

CA Los Angeles
Heath Co
2309 S Flower St
213-749-0261

CA La Mesa
Heath Co
8363 Center Dr
714-461-0110

CA Anaheim
Heath Co
330 E Ball Rd
714-776-9420

CA Redwood City
Heath Co
2001 Middlefield Rd
415-365-8155

CA Woodland Hills
Heath Co
22504 Ventura Blvd
213-883-0531

CA El Cerrito
Heath Co
6000 Potrero Ave
415-236-8870

CA Pomona
Heath Co
1555 N Orange Grove Ave
714-623-3543

CA Campbell
Heath Co
2350 S Bascom Ave
408-377-8920

CA Sacramento
Heath Co
1860 Fulton Ave
916-486-1575

CO Denver
Heath Co
5940 W 38 Ave
303-422-3408

CT Avon
Heath Co
395 W Main St
203-678-0323

FL Hialeah
Heath Co
4705 W 16 Ave
305-823-2280

FL Tampa
Heath Co
4019 W Hillsborough Ave
813-886-2541

GA Atlanta
Heath Co
5285 Roswell Rd
404-252-4341

IL Chicago
Heath Co
3462-66 W DeVon Ave
312-583-3920

IL Downers Grove
Heath Co
224 Ogden Ave
312-852-1304

IN Indianapolis
Heath Co
2112 E 62 St
317-257-4321

KS Mission
Heath Co
5960 Lamar Ave
913-362-4486

KY Louisville
Heath Co
12401 Shelbyville Rd
502-245-7811

LA Kenner
Heath Co
1900 Veterans Memorial Hwy
504-467-6321

MD Rockville
Heath Co
5542 Nicholson Ln
301-881-5420

MD Baltimore
Heath Co
1713 E Joppa Rd
301-661-4446

MA Wellesley
Heath Co
165 Worcester Ave
617-237-1510

MA Peabody
Heath Co
242 Andover St
617-531-9330

MI Detroit
Heath Co
18645 W Eight Mile Rd
313-535-6480

MI E Detroit
Heath Co
18149 E 8 Mile Rd
313-772-0416

MN Hopkins
Heath Co
101 Shady Oak Rd
612-938-6371

MN St Paul
Heath Co
1645 White Bear Ave
612-778-1211

MO Bridgeton
Heath Co
3794 McKelvey Rd
314-291-1850

NE Omaha
Heath Co
9207 Maple St
402-391-2071

NJ Fair Lawn
Heath Co
35-07 Broadway
201-791-6935

NJ Ocean
Heath Co
1013 State Hwy 35
201-775-1231

NY Jericho LI
Heath Co
15 Jericho Tnpk
516-334-8181

NY Amherst
Heath Co
3476 Sheridan Dr
716-835-3090

NY Rochester
Heath Co
937 Jefferson Rd
716-244-5470

NY No White Plains
Heath Co
7 Reservoir Rd
914-761-7690

OH Cleveland
Heath Co
28100 Chagrin Blvd
216-292-7553

OH Woodlawn
Heath Co
10133 Springfield Pike
513-771-8850

OH Columbus
Heath Co
2500 Morse Rd
614-475-7200

OH Toledo
Heath Co
48 S Byrne Rd
419-537-1887

OK Oklahoma City
Heath Co
2727 NW Exprwy
405-848-7593

PA Philadelphia
Heath Co
6318 Roosevelt Blvd
215-288-0180

PA Pittsburgh
Heath Co
3482 Wm Penn Hwy
412-824-3564

PA Frazer
Heath Co
630 Lancaster Pike
215-647-5555

RI Warwick
Heath Co
558 Greenwich Ave
401-738-5150

TX Houston
Heath Co
3705 Westheimer Rd
713-623-2090

TX Dallas
Heath Co
2715 Ross Ave
214-826-4053

TX San Antonio
Heath Co
7111 Blanco Rd
512-341-8876

UT Midvale
Heath Co
58 E 7200 S
801-566-4626

VA Virginia Beach
Heath Co
1055 Independence Blvd
804-460-0997

VA Alexandria
Heath Co
6201 Richmond Hwy
703-765-5515

WA Seattle
Heath Co
505 8th Ave
206-682-2172

WI Milwaukee
Heath Co
5215 W Fond du Lac Ave
414-873-8250

HEKIMIAN LABS INC
15825 Shady Grove Rd
Rockville, MD 20850
301-948-8855
Contact: Jack Imber
■ Products & Services
EIA cable testers
Electrical-parameters test equipment
Response-time monitors
Branch Sales Offices:

CA Mt View
CSS Telecommunications
2680 Bayshore Frontage Rd
415-964-4335

CA Irvine
CSS Telecommunications
3 Trenton St W
714-559-4403

CO Golden
Comm-Well Sales & Engineering
Route 5, Box 761
303-526-0807

CT Stamford
Datacomm Management Sciences
900 Hope St
203-324-7597

FL Melbourne
EME 3
975 Whitmire Dr
305-259-2711

GA Atlanta
EME 2
1680 Tullie Cir
404-325-0165

IL Arlington Heights
Reshal Assoc
219 W University Dr
312-398-7660

MI Brighton
Reshal Assoc
314 S Third St
313-227-1043

MN Minneapolis
Reshal Assoc
10521 Lakefall Dr
612-941-8697

NC High Point
EME 1
112 Buena Vista
919-869-3335

PA Norristown
Datacomm Management Sciences
564 Longmedow Rd
215-539-1217

WA Seattle
CSS Telecommunications
15841 32nd St NE
206-367-1440

ENGLAND
Tring, Hertfordshire
Genl Audio & Datacomm
70-80 Akeman St
4444-282-4011

FRANCE
Le Chesnay
Welect
4 Rue de la Bourboule
955-4787

HELLMAN ASSOCIATES
730 Alvarado Ct
Stanford, CA 94305
415-328-0647
Contact: Martin Hellman
■ Products & Services
Data communications consultants

HETRA COMPUTER & COMMUNICATIONS INDUSTRIES INC
1151 S Eddie Allen Rd
Melbourne, FL 32901
305-723-7731
Contact: Kurt Butler
■ Products & Services
Minicomputers
Packet processors
Line drivers
MIL 188C adapters
Batch terminals
Data entry terminals, portable
Intelligent (programmable) terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Terminal controllers
Computer/communications interfaces
Modem eliminators
Lease and resale organizations
Maintenance organizations
Branch Sales Offices:
CA Garden Grove
Hetra Computer & Comm Indust Inc
Box 1752
714-554-7420

HEWLETT-PACKARD CO
1501 Page Mill Rd
Palo Alto, CA 94304
415-856-1501
Advertising page 79
Contact: Ross Snyder
■ Products & Services
Front-end processors
Minicomputers
Remote network processors
Fiber optic systems
Modems, limited distance
Data content monitors
Electrical-parameters test equipment
Error rate detectors
Protocol analyzers
Response-time monitors
Network management centers
Tech control centers
DDP systems
Add-on main memory
Cartridges
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Badge readers
Batch terminals
Data entry terminals, portable
Digital plotters
Graphic display terminals
Intelligent (programmable) terminals
Interactive systems
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Video data terminals (KSR)
Video data terminals (RO)
Data com. softw, comms processor vend.

For further catalog information, turn to
Update Service Card, page 201.

Data com. softw. distr. dp systems vend.
Data com. softw. independ. softw houses

Branch Sales Offices:

AL	Huntsville Hewlett-Packard 8290 Whitesburg Dr SE 205-881-4591	IA	Iowa City Hewlett-Packard 1902 Broadway 319-338-9466	OH	Dayton Hewlett-Packard Co 330 Progress Rd 513-859-8202
AZ	Phoenix Hewlett-Packard 2336 E Magnolia St 602-244-1361	LA	Kenner Hewlett-Packard 3229-39 Williams Blvd 504-443-6201	OH	Columbus Hewlett-Packard Co 1041 Kingsmill Pkwy 614-436-1041
AZ	Tucson Hewlett-Packard 2424 Aragon Rd 602-294-3148	MD	Baltimore Hewlett-Packard 6707 Whitestone Rd 301-944-5400	OK	Oklahoma City Hewlett-Packard Co Box 32008 405-721-0200
CA	Fullerton Hewlett-Packard 1430 E Orangethorpe Ave 714-870-1000	MD	Rockville Hewlett-Packard 2 Choke Cherry Rd 301-948-6370	OR	Tualatin Hewlett-Packard Co 17890 SW Lower Boones Ferry Rd 503-620-3350
CA	North Hollywood Hewlett-Packard 3939 Lankershim Blvd 213-877-1282	MA	Lexington 32 Hartwell Ave 617-861-8960	PA	Pittsburgh Hewlett-Packard Co 111 Zeta Dr 412-782-0400
CA	Los Angeles Hewlett-Packard 6305 Arizona Pl 213-649-2511	MI	Farmington Hills Hewlett-Packard Co 23855 Research Dr 313-476-6400	PA	King of Prussia Hewlett-Packard Co 1021 8th Ave 215-265-7000
CA	Santa Clara Hewlett-Packard 3003 Scott Blvd 408-249-7000	MN	St Paul Hewlett-Packard Co 2400 N Prior Ave 612-536-0700	SC	Columbia Hewlett-Packard Co 6941 O N Trenholm Rd 803-782-6493
CA	Sacramento Hewlett-Packard 646 W North Market Blvd 916-929-7222	MO	Kansas City Hewlett-Packard Co 11131 Colorado Ave 816-763-8000	TN	Memphis Hewlett-Packard Co 3027 Vanguard Dr 901-346-8370
CA	San Diego Hewlett-Packard 9606 Aero Dr; Box 23333 714-279-3200	MO	St Louis Hewlett-Packard Co 1024 Executive Pkwy 314-878-0200	TX	Richardson Hewlett-Packard Co 201 E Arapaho Rd 214-231-6101
CO	Englewood Hewlett-Packard 5600 S Ulster 303-771-3455	NJ	Paramus Hewlett-Packard Co W 120 Century Rd 201-265-5000	TX	Houston Hewlett-Packard Co 10535 Harwin Dr 713-776-6400
CT	New Haven Hewlett-Packard 12 Lunar Dr 203-389-6551	NJ	Eatontown Hewlett-Packard Co Crystal Brook Prof Bldg 201-542-1384	TX	San Antonio Hewlett-Packard Co 205 Billy Mitchell Rd 512-434-8241
FL	Ft Lauderdale Hewlett-Packard Box 24210 305-731-2020	NM	Albuquerque Hewlett-Packard Co Box 11634; 11300 Lomas Blvd NE 505-292-1330	UT	Salt Lake City Hewlett-Packard Co 2160 South 3270 W St 801-972-4711
FL	Orlando Hewlett-Packard Box 13910; 6177 Lake Ellenor Dr 305-859-2900	NM	Las Cruces Hewlett-Packard Co 156 Wyatt Dr 505-526-2484	VA	Norfolk Hewlett-Packard Co No. 7 Koger Exec Center 804-461-4025/6
FL	Pensacola Hewlett-Packard Box 12826 904-476-8422	NY	Albany Hewlett-Packard Co 6 Automation La 518-458-1550	VA	Richmond Hewlett-Packard Co 2914 Hungary Springs Rd 804-285-3431
GA	Atlanta Hewlett-Packard Box 105005 404-955-1500	NY	Poughkeepsie Hewlett-Packard Co 201 S Ave 914-454-7330	WA	Bellevue Hewlett-Packard Co 1203 114th Av SE 206-454-3971
GA	Warner Robins Hewlett-Packard Box 2103 912-922-0449	NY	Rochester Hewlett-Packard Co 39 Saginaw Dr 716-473-9500	WI	West Ailis Hewlett-Packard Co 9004 W Lincoln Av 414-541-0550
HI	Honolulu Hewlett-Packard 2875 S King St 808-955-4455	NY	Syracuse Hewlett-Packard Co 5858 E Molloy Rd 315-454-2486	ALBERTA, CANADA	Edmonton Hewlett-Packard (Canada) Ltd 11620A 168 St 403-452-3670
IL	Rolling Meadows Hewlett-Packard 5201 Tollview Dr 312-255-9800	NC	Woodbury Hewlett-Packard Co 1 Crossways Park W 516-921-0300	ALBERTA, CANADA	Calgary Hewlett-Packard (Canada) Ltd 210.7220 Fisher St SE 403-253-2713
IN	Indianapolis Hewlett-Packard 7301 N Shadeland Ave 317-842-1000	NC	High Point Hewlett-Packard Co 1923 N Main St 919-865-8101	BRITISH COLUMBIA, CANADA	Vancouver Hewlett-Packard (Canada) Ltd 837 E Cordova St 604-254-0531
		OH	Cleveland Hewlett-Packard Co 16500 Sprague Rd 216-243-7300		

MANITOBA, CANADA

Winnipeg
Hewlett-Packard (Canada) Ltd
513 Century St
204-786-7581

PRINCE EDWARD ISLAND, CANADA

Dartmouth
Hewlett-Packard (Canada) Ltd
800 Windmill Rd
902-469-7820

ONTARIO, CANADA

Ottawa
Hewlett-Packard (Canada) Ltd
1020 Morrison Dr
613-820-6483

ONTARIO, CANADA

Mississauga
Hewlett-Packard (Canada) Ltd
6877 Goreway Dr
416-678-9430

QUEBEC, CANADA

Pointe Claire
Hewlett-Packard (Canada) Ltd
275 Hymus Blvd
514-697-4232

AUSTRIA

Vienna
Hewlett-Packard Ges mbH
Handelskai 52
0222-351621

BELGIUM

Brussels
Hewlett-Packard Benelux
Ave de Col Vert 1
02-672-22-40

DENMARK

Birkerød
Hewlett-Packard A/S
DK-3460
02-81-66-40

DENMARK

Silkeborg
Hewlett-Packard A/S
DK-8600
06-82-71-66

ENGLAND

Winnesh, Wokingham
Hewlett-Packard Ltd
King Street La
0734-78-47-74

ENGLAND

Altrincham
Hewlett-Packard Ltd
Navigation Road
061-928-6422

ENGLAND

Thornton Heath
Hewlett-Packard Ltd
799 London Road
01-684-0103/8

ENGLAND

New Town
Hewlett-Packard Ltd
South Serviceholesale Centre;
Washington
Washington 464001

ENGLAND

Castleford, W Yorkshire
Hewlett-Packard Ltd
10, Wesley St
09775-50402

FINLAND

Helsinki
Hewlett-Packard OY
Nahkahousuntie 5
90-6923031

FRANCE

Orsay
Hewlett-Packard France
Quartier de Courtaboeuf
1-907-78-25

FRANCE

Ecully
Hewlett-Packard France
78-33-81-25

FRANCE

Toulouse-Le Mirail
Hewlett-Packard France
Chemin de la Cepidre
61-40-11-12

FRANCE

Marignane
Hewlett-Packard France
91-89-12-36

FRANCE

Strasbourg
Hewlett-Packard France
88-35-20/21

FRANCE

Lille
Hewlett-Packard France
rue Colbert
20-51-44-14

FRANCE

Le Blanc Mesnil Cedex
Hewlett-Packard France
Rue de La Commune de Paris
01-931-88-50

GERMANY, WEST

Hannover-Kleefeld
Hewlett-Packard GmbH
Am Grossmarkt 6
0511-46-60-01

GERMANY, WEST

Frankfurt
Hewlett-Packard GmbH
Bernerstrasse 117
0611-50-04-1

GERMANY, WEST

Boblingen, Württemberg
Hewlett-Packard GmbH
Herrenbergerstrasse 110
07031-667-1

GERMANY, WEST

Dusseldorf
Hewlett-Packard GmbH
Emanuel-Leutze-Str. 1
07031-667-1

GERMANY, WEST

Hamburg
Hewlett-Packard GmbH
Wendenstrasse 23
040-24-13-93

GERMANY, WEST

Karlsruhe
Hewlett-Packard GmbH
Ohmstrasse 6
0721-69-40-06

GERMANY, WEST

Nuremberg
Hewlett-Packard GmbH
Neumeyer Str. 90
0911-56-30-83/85

GERMANY, WEST

Ottobrunn
Hewlett-Packard GmbH
Unterhachinger Strasse 28
089-601-30-61/7

GERMANY, WEST

Berlin
Hewlett-Packard GmbH
Keith Strasse 2-4
030-24-90-86

GERMANY, WEST

Berlin
Hewlett-Packard GmbH
Keith Strasse 2-4
030-24-90-86

GERMANY, WEST

Berlin
Hewlett-Packard GmbH
Keith Strasse 2-4
030-24-90-86

GERMANY, WEST

Berlin
Hewlett-Packard GmbH
Keith Strasse 2-4
030-24-90-86

GERMANY, WEST

Berlin
Hewlett-Packard GmbH
Keith Strasse 2-4
030-24-90-86

GERMANY, WEST

Berlin
Hewlett-Packard GmbH
Keith Strasse 2-4
030-24-90-86

GERMANY, WEST

Berlin
Hewlett-Packard GmbH
Keith Strasse 2-4
030-24-90-86

GERMANY, WEST

Berlin
Hewlett-Packard GmbH
Keith Strasse 2-4
030-24-90-86

ITALY

Napoli
Hewlett-Packard Italiana SpA
Via Amerigo Vespucci 9
081-33-71-11

ITALY

Padova
Hewlett-Packard Italiana SpA
Via Pietro Maroncelli 40
49-66-48-88

ITALY

Torino
Hewlett-Packard Italiana SpA
Corso Giovanni Lanza 94
011-682245

NETHERLANDS

Amstelveen
Hewlett-Packard Benelux NV
Van Heuven Goethartlaan 121
020-47-20-21

NORWAY

Haslum
Hewlett-Packard Norge A/S
Nesveien 13
02-53-83-60

SAUDI ARABIA

Jeddah
Hewlett-Packard Co
King Abdul Aziz str., Box 1228
31173-332201

SPAIN

Madrid
Hewlett-Packard Espanola, SA
Jerez, Calle 3
1-458-26-00

SPAIN

Barcelona
Hewlett-Packard Espanola, SA
Milanesado 21-23
3-203-6200

SWEDEN

Bromma
Hewlett-Packard Sverige AB
Enighetsvagen 1-3
08-730-05-50

SWEDEN

Orebro
Hewlett-Packard Sverige AB
Ostra Vintergatan 22
019-14-07-20

SWITZERLAND

Schlieren-Zurich
Hewlett-Packard (Schweiz) AG
Zurcherstrasse 20
01-730-52-40

SWITZERLAND

Le Lignon-Geneva
Hewlett-Packard (schweiz) AG
Chateau Bloc 19
022-96-03-22

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

HICO-HORIZONS INTERNATIONAL CO

716 Willow Rd
Menlo Park, CA 94025
415-328-1111
Contact: Charles R Long
■ Products & Services
Cartridges
Cartridge drives
Cassettes
Cassette drives
Tape drives, magnetic
Branch Sales Offices:
CA Menlo Park
Long & Assoc
718 Willow Rd
415-327-1300

CA Los Angeles
Sierra Industrial Engr Co
321 E Boyd St
213-624-3123

CO Parker
J S Heaton
Box 385
303-841-3651

CT Winsted
Motoreps
100 Whiting St
203-379-8501

FL St Petersburg
Tech-Rep Assoc Inc
3251 Tech Dr N
813-577-2779

FL West Palm Beach
Tech-Rep Assoc Inc
11546 59 St N
305-793-5334

FL Orlando
Tech-Rep Assoc Inc
Box 13228
305-855-2648

IL Chicago
Engineered Sales Co
7311 W Lawrence
312-867-8434

MD Baltimore
R L Wilkinson Inc
707 Stevenson La
301-377-7800

MA Needham
Motoreps
10 Kearney Rd
617-449-3252

NJ Red Bank
Motoreps
157 Broad St
201-741-3356

NY Buffalo
H C Johnson Agencies
8 Los Robles St
716-632-7880

NY Rochester
H C Johnson Agencies
875 Atlantic Av
716-482-3000

NY Albany
H C Johnson Agencies
105 Wolf Rd
518-459-1239

OH Dayton
Electrical Systems Co
270 Regency Ridge
513-434-9822

OH Springfield
Electrical Systems Co
Box 336
513-399-8022

OR Portland
The Thorson Company NW
7000 SW Hampton St
503-620-5801

PA Glenside
R L Wilkinson Inc
Box 215
215-887-5300

TX Dallas
Kruvand Assoc
10300 N Central Expwy
214-691-4592

TX Houston
Kruvand Assoc
7333 Harwin Dr
713-780-9710

WA Bellevue
The Thorson Company NW
1 Lake Bellevue Dr
206-455-9180

HITACHI AMERICA LTD
COMPUTER SALES & SERVICE DIV
100 California St
San Francisco, CA 94111
415-981-7871
Contact: Mike Sudo
■ Products & Services
DDP systems
Disc drives, floppy
Disc drives, large
Disc packs
Tape drives, magnetic
Intelligent (programmable) terminals
Video data terminals (KSR)
Power supplies, uninterruptible; line
correctors, etc.

HONEYWELL INFORMATION SYSTEMS

200 Smith St
Waltham, MA 02154
617-890-8400
Contact: Patricia Flynn
■ Products & Services
Concentrators
Front-end processors
Message switchers
Minicomputers
Packet processors
Remote network processors
DDP systems
Cartridge drives
Disc drives, floppy
Disc drives, large
Tape, magnetic
Tape drives, magnetic
Batch terminals
Intelligent (programmable) terminals
Interactive systems
Remote line printers
Remote job entry terminals
Teleprinters, impact
Video data terminals (KSR)
Modem eliminators
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.
Data com. softw, intel. term. vendors
Maintenance organizations
Timesharing/service bureaus

HUGHES AIRCRAFT CO INDUSTRIAL PRODUCTS DIV

6155 El Camino Real
Carlsbad, CA 92008
714-438-9191
Contact: C T Raines
■ Products & Services
Graphic display terminals
Interactive systems

HUMAN DESIGNED SYSTEMS INC

3700 Market St
Philadelphia, PA 19104
215-382-5000
Contact: Roger Pincus
■ Products & Services
Data entry terminals, portable
Graphic display terminals
Intelligent (programmable) terminals
Video data terminals (KSR)

Branch Sales Offices:

DE Hockessin
Infocon
RD 2
302-239-7868

IL Chicago
Resource Data Systems
801 Skokie Blvd
312-564-5440

MD Bethesda
International Systems Mktg
5161 River Rd
301-986-0773

MA Needham
Human Designed Systems
95 Edwardel Rd
617-444-8132

NY N Syracuse
Naco Electronics
Box 276
315-699-2651

HYDRIL CONTROL SYSTEMS DIV

8383 Commerce Pk Dr
Houston, TX 77036
713-777-5361
Contact: Alan Carpenter
■ Products & Services
Front-end processors
Modems, voice-grade, low-speed
Branch Sales Offices:

CA Encino
Hydril Control Systems Div
5535 Balboa
213-981-5206

NY Westbury
Tech Rep Eng Sales
51 Boyd Dr
516-997-7946

TX Midland
Hydril Control Systems Div
Box 134
915-682-5651

IDENTIFICATION SYSTEMS INC

4 High St
Acton, MA 01720
617-263-2111
Contact: Ronald Wilfert
■ Products & Services
Badge readers
Data security devices, personal ident. sys.
Data security devices, softw. security mod.

IESI INC

408 NE 72 St
Seattle, WA 98115
206-525-6800
Contact: Rob Brown
■ Products & Services
Batch terminals
Data entry terminals, portable
Intelligent (programmable) terminals
Interactive systems
Remote job entry terminals
Teleprinters, non-impact
Data com. softw, intel. term. vendors

Branch Sales Offices:

FL Miami
Systems Products Int'l
7220 NW 36
305-592-7056

NY Larchmont
IESI Inc
626A Larchmont Acres
914-834-3484

NC Charlotte
GLS Inc
6140 Sharon Rd
704-527-5950

OH Dayton
Electro Sales Assoc
1635 Mardon Dr
513-426-5551

TX Richardson
Maron Data Products
2311 Clearwater Cir
214-234-1230

WA Seattle
Distributed Data Products Inc
1200 Westlake N
206-581-7140

PR Rio Piedras
Management Data Inc
La Electronica Bldg
746-5592

AUSTRALIA
Chatswood
Saztec (Equipment) Pty Ltd
815 Pacific Hwy
411-5377

For further catalog information, turn to
UpDate Service Card, page 201.

IMAGE SYSTEMS INC
11244 Playa Ct
Culver City, CA 90230
213-390-3378
Contact: T P Fitzgerald
■ Products & Services
Microfilm equipment, systems and services

Branch Sales Offices:

CA Culver City
Image Systems Inc
11244 Playa Ct
213-390-3378

NY New York
Image Systems Inc
225 Park Ave S
212-677-1510

IMLAC CORP
150 A St
Needham, MA 02194
617-449-4600
Contact: R Kevin Ryan
■ Products & Services
Graphic display terminals
Intelligent (programmable) terminals
Interactive systems

Branch Sales Offices:

CA Sherman Oaks
Electronic Marketing Specialists
13837 Ventura Blvd
213-990-4244

CA Tustin
Electronic Marketing Specialists
2600 Walnut Ave
714-832-9920

CA Sunnyvale
Electronic Marketing Specialists
Sandy Plaza; 599 N Mathilda Av
408-245-9291

CO Denver
Imlac
720 S Colorado Blvd
303-759-2052

FL Melbourne
Imlac
1902 Highway A1A
305-777-3000

IL Oak Brook
Imlac
800 Enterprise Dr
312-654-1208

MD Greenbelt
Imlac
9111 Edmonston Rd
301-345-7707

MA Needham
Imlac
150 A St
617-449-4600

MI Southfield
Imlac
24901 Northwestern Hwy
313-358-5070

NJ Woodbridge
Imlac
479 Green St
201-634-8963

TX Dallas
Imlac
7839 Churchill Way
214-980-4179

WA Bellevue
Imlac
1603 116 Ave NE
206-455-3373

ENGLAND

Amersham, Bucks
Imlac Int Ltd
17 Chesham Rd
02403-22167

INCOTERM CORP

A SUBSIDIARY OF HONEYWELL INC

65 Walnut St
Wellesley Hills, MA 02181
617-237-2100
Contact: Alexander Stephens
■ Products & Services
Minicomputers
DDP systems
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Tape punch/reader, paper
Batch terminals
Intelligent (programmable) terminals
Remote job entry terminals
Data com. softw, distr. dp systems vend.
Data com. softw, intel. term. vendors
Maintenance organizations

Branch Sales Offices:

CA Los Angeles
INCOTERM Corp
5959 W Century Blvd
213-670-4830

CA San Francisco
INCOTERM Corp
One Market Plaza
415-777-1414

CA San Diego
Incoterm Corp
9620 Ridgehaven Ct
714-571-1221

CA Van Nuys
INCOTERM Corp
7037 Hayvenhurst Ave
213-988-0003

CO Denver
INCOTERM Corp
2695 Alcott St
303-455-7108

FL Tampa
INCOTERM Corp
5401 W Kennedy Blvd
813-872-4851

GA Atlanta
INCOTERM Corp
2200 Century Pkwy
404-321-2366

IL Schaumburg
INCOTERM Corp
1701 E Woodfield Rd
312-882-8010

IL Schiller Park
INCOTERM Corp
4825 N Scott St
312-671-0153

KS Shawnee Mission
INCOTERM Corp
10000 W 75 St
913-262-8484

MA Wellesley Hills
INCOTERM Corp
65 Walnut St
617-237-2100

MA Framingham
INCOTERM Corp
1661 Worcester Rd
617-620-972

MI Detroit
INCOTERM Corp
26711 Northwestern Hwy
313-353-8880

NY New York
INCOTERM Corp
1211 Av of Americas
212-398-8352

OH Canton
INCOTERM Corp
4450 Belden Village Av NW
216-492-7851

OR Portland
INCOTERM Corp
7150 SW Hampton Rd
503-620-9113

PA Pittsburgh
INCOTERM Corp
650 Smithfield St
412-263-2920

PA Bala Cynwyd
INCOTERM Corp
121 Presidential Blvd
412-263-2920

TN Nashville
INCOTERM Corp
3200 W End Ave
615-292-3387

TN Memphis
INCOTERM Corp
5100 Popular Ave
901-767-3524

TX Dallas
INCOTERM Corp
2915 LBJ Frwy
214-243-5371

TX Houston
INCOTERM Corp
1535 W Loop S
713-780-6821

VA McLean
INCOTERM Corp
7926 Jones Branch Dr
703-821-1115

VA McLean
INCOTERM Corp
7926 Jones Branch Dr
703-821-8585

WA Bellevue
INCOTERM Corp
305 108 Ave NE
206-453-0954

ONTARIO, CANADA

Toronto
Incoterm Computers & Terminals
Ltd
439 University Av
416-598-1525

ENGLAND

Uxbridge, Middlesex
INCOTERM Ltd
Boundary House; Cricketfield Rd
895-56161

FRANCE

Paris
TRANSAC SA
25 Avenue de la Grande Armee,
Cedex 16-e
502-13-23

HONG KONG
Hong Kong
Cable & Wireless Systems Ltd
Connaught Road Central
5-2831385

INDIA
New Delhi
Harvik Electronics Corp
Phelps Building; 9A Cannaught
Place
344-493

NEW ZEALAND
Parnell, Auckland
International Data Australasia
(Pty) Ltd
60 Parnell Rd
378-738

SOUTH AFRICA
Lynnwood, Pretoria
Perscus Computing & Automation
(Pty) Ltd
457 Rodericks Rd
12-47-1161

SWEDEN
Vaxjo
Vaxjo Data System AB
Box 3034
470-10070

INDUSTRIAL COMPUTER CONTROLS INC

196 Broadway
Cambridge, MA 02139
617-864-0283
■ Products & Services
Message switchers
Computer/communications interfaces
Protocol converters

Branch Sales Offices:

CA Irvine
CSS Telecommunications
Specialists
3 Trenton W
714-559-4403

CA Mountain View
CSS Telecommunications
Specialists
2680 Bayshore Frontage Rd
415-964-4335

GA Decatur
Dynamic Management Systems
780 DeKalb Industrial Way
404-292-4126

IL Northbrook
Resource Data Systems
801 Skokie Blvd
312-564-5440

MD Rockville
J4 Systems
51 Monroe St
301-424-4144

OK Tulsa
Comspec Inc
Box 7597
918-743-6892

TX Richardson
Comspec Inc
717 Lingco
214-234-4137

TX Austin
Comspec Inc
Box 15911
512-837-3881

TX Houston
Comspec Inc
Box 79438
713-461-4487

WA Seattle
CSS Telecommunications
Specialists
15841 32 Ave NE
206-367-1440

INFOREX INC
21 North Ave
Burlington, MA 01803
617-272-6470
Contact: F James Carr
■ Products & Services
Minicomputers
Modem sharing units
Port sharing units
DDP systems
Batch terminals
Remote job entry terminals

Branch Sales Offices:

AZ Phoenix
Inforex Inc
5201 N 19 Av
602-242-8981

CA Los Angeles
Inforex Inc
5301 Beethoven St
213-391-0616

CA Burlingame
Inforex Inc
1633 Old Bayshore Hwy
415-697-1000

CO Denver
Inforex Inc
2480 W 26 Av
303-433-6242

FL Miami
Inforex Inc
1525 NW 167 St
305-621-7586

GA Atlanta
Inforex Inc
250 Piedmont Av NE
404-659-2234

IL Rosemont
Inforex Inc
9801 W Higgins Rd
312-692-5500

IN Indianapolis
Inforex Inc
2441 Production Dr
317-244-9576

KS Kansas City
Inforex Inc
Fourth & State Av
913-321-8887

MA Burlington
Inforex Inc
12 N E Exec Pk
617-273-1960

MI Southfield
Inforex Inc
24901 Northwestern Hwy
313-353-1580

MN Minneapolis
Inforex Inc
5001 W 80th St
612-835-6550

MO Richmond Heights
Inforex Inc
7700 Clayton Rd
314-644-6020

NE Omaha
Inforex Inc
7000 W Center Rd
402-393-2283

NJ Woodbridge
Inforex Inc
900 Route 9
201-636-2030

NY New York
Inforex Inc
212-594-7830

NY Rochester
Inforex Inc
140 Allens Creek Rd
716-442-7030

NC Greensboro
Inforex Inc
Friendship Center Office Park
919-292-9225

OH Cincinnati
Inforex Inc
4055 Exec Pk Dr
513-563-4111

OH Independence
Inforex Inc
4600 Rockside Rd
216-524-9030

OH Columbus
Inforex Inc
2101 S Hamilton Rd
614-868-0397

OK Oklahoma City
Inforex Inc
1330 Classen Blvd
405-232-5696

PA Wayne
Inforex Inc
530 E Swedesford Rd
215-687-9330

PA Pittsburgh
Inforex Inc
1910 Cochran Rd
412-343-0700

TX Dallas
Inforex Inc
4360 Spring Valley Rd
214-386-4895

TX Houston
Inforex Inc
4151 Southwest Frwy
713-621-7411

VA Rosslyn
Inforex Inc
1901 N Moore St
703-522-8200

WA Seattle
Inforex Inc
2722 Eastlake Av E
206-322-6760

WI Brookfield
Inforex Inc
205 Bishop's Way
414-784-0120

If you know the name of the product, you can find out who makes it in the **Products & Services Directory, page 5.**

INFORMATICS INC
21031 Ventura Blvd
Woodland Hills, CA 91364
213-887-9040
Contact: Janet Wharton
■ Products & Services
Data communications consultants
Data com. softw, distr. dp systems vend.
Data com. softw, independ. softw houses
Timesharing/service bureaus

Branch Sales Offices:

CA Canoga Park
Informatics Inc
21050 Vanowen St
213-887-9121

CA Marina del Rey
Informatics Inc
4640 Admiralty Way
213-822-3552

- CA Century City
Informatics Inc
10100 Santa Monica Blvd
213-553-3524
- CA Palo Alto
Informatics Inc
1121 San Antonio Rd
415-964-9900
- CA Los Angeles
Informatics Inc
3255 Wilshire Blvd
213-386-0400
- CA San Francisco
Informatics Inc
One Market Plaza
415-777-1536
- CT Stamford
Informatics Inc
123 Prospect Ave
203-357-7924
- DE Hockessin
Informatics Inc
Hartnett Bldg Lancaster Pike
302-239-2389
- GA Atlanta
Informatics Inc
340 Interstate N Pkwy
404-955-2518
- IL Des Plaines
Informatics Inc
701 Lee St
312-298-9300
- MD Rockville
Informatics Inc
6011 Executive Blvd
301-770-3000
- MD Rockville
Informatics Inc
1776 E Jefferson
301-468-2600
- MD Riverdale
Informatics Inc
6811 Kenilworth Ave
301-699-7700
- MN Minneapolis
Informatics Inc
5200 W 73 St
612-835-2946
- NE Bellevue
Informatics Inc
1508 Kennedy Dr
402-291-8300
- NJ River Edge
Informatics Inc
65 Route 4
201-488-2100
- NJ Fairfield
Informatics Inc
6 Kingsbridge Rd
201-575-9610
- NJ Mt Laurel
Informatics Inc
125 Gaither Dr
609-234-6950
- NY New York
Informatics Inc
475 Park Ave
212-481-6800
- NY New York
Informatics Inc
1500 Broadway
212-869-1750
- NY New York
Informatics Inc
555 Madison Ave
212-935-6500
- NC Raleigh
Informatics Inc
4904 Professional Ct
919-872-7800
- OH Columbus
Informatics Inc
1651 NW Prof Plaza
614-457-7250
- TX Ft Worth
Informatics Inc
3424 Hilldale Rd
817-731-3766
- TX Dallas
Informatics Inc
10300 N Central Expwy
214-696-1900
- TX Houston
Informatics Inc
1035 Dairy-Ashford
713-493-6681
- VA McLean
Informatics Inc
7926 Jones Branch Dr
703-821-5900
- WA Federal Way
Informatics Inc
33741 Ninth Ave S
206-927-0700
- ONTARIO, CANADA
Willowdale
Mark IV Informatics Canada Ltd
2 Lansing Square
416-493-9716
- BRAZIL
Sao Paulo
Informatics Do Brasil
Av Brig Faria Lima 1541
813-4141
- DENMARK
Copenhagen
Informatics P&W Aps
Zinnsgade 7
01-42-01-00
- ENGLAND
London
Informatics Consulting Ltd
64-78 Kingsway
01-836-8918
- ENGLAND
Harrow
Informatics (UK) Ltd
102 College Rd
01-863-0066
- FRANCE
Paris
Informatics (France) SA
41 Rue Ybry
630-842
- GERMANY, WEST
Bad Homburg
Informatics GmBH
128 Luisenstrasse
06172-44016
- JAPAN
Tokyo
Informatics Japan Ltd
2-3-1 Hitotsubashi
03-263-7241
- SWEDEN
Stockholm
Informatics Norden A/S
Sveavagan 108 11
08-15-01-85
- SWITZERLAND
Geneva
Informatics SA
267 route de Meyrin
41-022-82-51-51
- INFORMATION ACCESS SYSTEMS
1140 Bloomfield Ave
West Caldwell, NJ 07006
201-575-6464
Contact: Attn: VP Mktg

■ Products & Services
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.
Data com. softw, independ. softw houses

INFORMATION RETRIEVAL SYST CORP

Two Penn Plaza
New York, NY 10001
212-947-6400
Contact: Matthew Shipman
■ Products & Services
Microfilm equipment, systems and services

Branch Sales Offices:

CA El Cajon
Information Retrieval Syst Corp
4671 Jeri Way
714-444-6555

INFORMER INC

8332 Osage Ave; PO Box 91054
Los Angeles, CA 90045
213-649-2030
Contact: Will Little

■ Products & Services
Data content monitors
Bar code readers
Batch terminals
Intelligent (programmable) terminals
Remote job entry terminals
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

AZ Seattle
Delcom Sales Co
144 SW 153 St
206-248-0090

CA Los Angeles
Informer Inc
8332 Osage Ave
213-649-2030

CA Sunnyvale
RC Data Inc
528 Weddell St
408-745-7410

MD Linthicum Heights
K D Assoc
201 Benton Av
301-636-1151

MA Southboro
Victor Electronics Corp
304 Turnpike Rd
617-481-4011

MN St Paul
Countryman Assoc
1821 University Av
612-645-9151

MO St Johns
Midwest Marketing
3606 Woodson Rd
314-426-2500

OH Cleveland
Electro Sales Assoc
851 E 222 St
216-261-5440

TX Plano
Informer Inc
1216 Villa Downs
214-422-2633

INFOTON INC

37 North Ave
Burlington, MA 01803
617-272-6660
Contact: Harland K Lavigne
■ Products & Services
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

- AZ Scottsdale
BFA Corp
4426 N Saddlebag Trail
602-994-5400
- CA Tustin
Infoton Inc
14831 Franklin Ave
714-730-0123
- CA Newport Beach
Infoton Inc
4020 Birch St
714-752-1938
- GA Atlanta
Infoton Inc
5180 Meadow Lake Dr
404-393-2057
- NY E Northport
Infoton Inc
73 Wintercress Ln
516-368-4005
- TX Houston
Infoton Inc
W Memorial Pk; 8582 Katy Frwy
713-932-1365
- ONTARIO, CANADA
Markham
LANPAR Ltd
85 Torboy Rd
416-495-9123
- BELGIUM
Brussels
Infoton
Avenue Louise 176
924-76712
- ENGLAND
Sevres
Infoton
Rye Carle Vernet
027-7535
- ENGLAND
Chertsey, Surrey
Infoton
5 London St
667-445
- GERMANY, WEST
Munich
Infoton
Lindwurmstrasse 117
089-775-031
- NORWAY
Kristiansand
Infoton
Dalanevein 18A
042-314-60
- SWITZERLAND
Geneva
Infoton
31 Avenue Ernest Pictet
022-442-940

INFOTRON SYSTEMS CORPORATION

Cherry Hill Ind Center
Cherry Hill, NJ 08003
609-424-9400
Advertising page 31
Contact: Tony Barbaro
■ Products & Services
Concentrators
Multiplexers, time division
Multiplexers, intelligent
Port selectors
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Data content monitors
Electrical-parameters test equipment

Branch Sales Offices:

- NJ Cherry Hill
Infotron Systems Corp
Cherry Hill Industrial Ctr
800-257-8352
- ENGLAND
Dorchester
Infotron Systems Ltd
Systems House
0305-66016
- GERMANY, WEST
Porz
Telonic Berkeley GmbH
Friedrichstrasse 14-16; D-5000
Köln 90
0-22-03
- INMAC
2465 Augustine Dr
Santa Clara, CA 95051
408-727-1970
Contact: Ken Eldred
■ Products & Services
Cartridges
Cassettes
Discs, floppy
Disc packs
Tape, magnetic
Tape, paper
Tape punch/reader, paper
Cables, electrical prefabricated extender
Computer/communications interfaces
Data jacks and plugs
Furniture, cabinets, terminal enclosures
Modem eliminators
Paper for terminals
Power supplies, uninterruptible; line
correctors, etc.
Ribbons and supplies for terminals and
printers
Switches, data communications, manual
- Branch Sales Offices:
- CA Sunnyvale
Inmac
130 S Wolfe Rd
408-737-8700
- NJ Norwood
Inmac
70 Oak St
201-767-3601

INNOVATIVE ELECTRONICS INC

15200 NW 60th Ave
Miami Lakes, FL 33014
305-558-1591
Advertising page 153
Contact: George Harrison
■ Products & Services
Concentrators
Front-end processors
Inverse multiplexers
Line sharing units
Modem sharing units
Port selectors
Port sharing units
Remote network processors
Protocol analyzers
RTS emulator
Remote line printers
Teleprinters, impact
Teletypewriters
Code converters
Computer/communications interfaces
Data compactor
Error Controllers
Protocol converters
Data communications consultants
Used equipment

INTECOM INC

16509 Addison Rd
Dallas, TX 75240
214-233-0566
■ Products & Services
Computerized branch exchange (CBX)
Network management centers
Telecommunications monitor
Switches, data communications, automatic

INTEGRAL DATA SYSTEMS INC

14 Tech Circle
Natick, MA 01760
617-237-7610
Contact: Peter R Eisenhauer
■ Products & Services
Teleprinters, impact

Branch Sales Offices:

- AL Huntsville
Gentry Assoc Inc
2109 W Clinton Ave
205-534-9771
- AZ Scottsdale
BFA Corp
4426 N Saddlebag Trail
602-994-5400
- CA Redonda Bch
Group III EElectronic
2615 Manhattan Beach
213-973-7844
- CA San Diego
Group III EElectronic
23333 Camino Del Rio
714-578-1120
- CA Sunnyvale
Group III EElectronic
542 Lakeside Dr
408-245-4392
- CO Denver
BFA Corp
12015 E 46 Ave
303-371-2422
- CT Hamden
Datcom Inc
1 Evergreen Ave
203-288-7005
- FL Orlando
Gentry Assoc Inc
550 N Bumby Ave
305-894-4401
- GA Atlanta
Gentry Assoc Inc
16 Perimeter Park Dr
404-455-1206
- IL Arlington Hts
Dytec/Central
315 W University Dr
312-394-3380
- IN Indianapolis
Dytec/Central
25 Beachway Dr
317-247-1316
- IA Iowa City
Dytec/Iowa
Box 2148
319-683-2282
- LA Gretna
Gentry Assoc Inc
1799 Stumpf Blvd
504-367-3975
- MD Rockville
MESA Inc
11900 Parklawn Dr
301-881-8430
- MA Waltham
Datcom Inc
55 Moody St
617-891-4600

MI Madison Hts
WKM Assoc Inc
345 Girard
313-588-2300

MN St Paul
Dytec/North
1821 University Ave
612-645-5816

MO Hazelwood
Dytec/South
320 Brooks Dr
314-731-5400

NM Albuquerque
BFA Corp
3705 Westerfield Rd NE
505-292-1212

NM Las Cruces
BFA Corp
532 E Amador Ave
505-523-0601

NY Elmont
Crane & Egert Corp
146 Meacham Ave
516-488-2100

NY N Syracuse
NACO Electronics Inc
Box 276
315-699-2651

NC Burlington
Gentry Assoc Inc
428 Alamance Rd
919-227-3639

OH Dayton
WKM Assoc Inc
7913 S Suburban Rd
513-434-7500

OH Cleveland
WKM Assoc Inc
16141 Puritas Ave
216-267-0445

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Pacific Northwest Electronic
2035 SW 58
503-292-3505

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WKM Assoc Inc
90 Clairton Blvd
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Mycrosystems Marketing Inc
13777 N Central Exp
214-238-7157

TX San Antonio
Mycrosystems Marketing Inc
4502 Centerview
512-735-5073

TX Houston
Mycrosystems Marketing Inc
6610 Harwin
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Pacific Northwest Electronic
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4186 Sorrento Valley Blvd; Suite C
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714-452-0170

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Data com. softw, independ. softw houses

Branch Sales Offices:

CO Littleton
Davis Assoc Inc
709 W Littleton Blvd
303-795-1400

DC Washington
Applied Urbanetics
1701 K St NW
202-331-1800

GA Atlanta
Dybell/Ware & Assoc Inc
3395 NE Exprwy
404-455-1621

MA Wellesley Hills
Fowler Anthony & Co
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617-237-4201

TX Houston
Dybell/Ware & Assoc Inc
5739 Hummingbird
713-723-7579

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5965 Peachtree Corners East
Norcross, GA 30071
404-449-5961
Contact: Ezra Mintz
■ Products & Services
Disc drives, floppy
Graphic display terminals
Intelligent (programmable) terminals
Remote line printers
Video data terminals (KSR)

Branch Sales Offices:

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W A Brown Instruments Inc
7912-C Chralotte Dr
205-883-8660

AZ Scottsdale
BFA Corp
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602-994-5400

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805-964-8751

CA Irvine
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17775 Main St
714-557-4460

CA San Diego
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7841 Balboa Av
714-292-8525

CA Los Angeles
Computers International
3780 Wilshire Blvd
213-382-1107

CO Englewood
The Thorson Co
7076 S Alton Way
303-779-0666

FL Ft Lauderdale
W A Brown Instruments
961 NW 53 St
305-776-4800

FL Melbourne
W A Brown Instruments
701 Lincoln Ave
305-723-0766

FL Orlando
W A Brown Instruments
222 Weber St
305-425-5505

FL Tallahassee
W A Brown Instruments
1325 E Tennessee St
904-878-6642

GA Atlanta
W A Brown Instruments
3070 Presidential Dr
404-455-1035

GA Atlanta
American Business Systems
Box 88220
404-394-9603

GA Atlanta
ISC Middle East
Box 48541
404-581-0284

IL Northbrook
Resource Data Systems
801 Skokie Blvd
312-564-5440

LA Mandeville
W A Brown Instruments
350 N Causeway Blvd
504-626-9701

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7830 Backlick Rd
703-569-1502

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225 East St
617-729-5770

MI Brighton
Lowry & Assoc Inc
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313-227-7067

MN S Minneapolis
Cost Reductions
3142 Hennepin Av
612-822-2119

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505-292-1212

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NY N Syracuse
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919-682-2383

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1440 Snow Rd
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OH Dayton
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1524 Marsetta Dr
513-429-9040

OR Portland
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7000 SW Hampton St
503-620-5800

PA Ambler
Demco Data Equipment Corp
25 Skippack Pk
215-542-9876

PA Pittsburgh
Lowry & Assoc Inc
Seven Parkway Ctr
412-922-5110

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803-798-3297

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TX Dallas
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214-661-9633

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3691 W 1987 S
801-973-7969

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1 Expo Court
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0202-293-115

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Techdata
92 Avenue Albert 1er
749-40-37

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Roma
Technitron
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Tokyo
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Inc
2-22-10 Jingumae; Shibuya-ku
402-8596

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057-546-55

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677 Ala Moana Blvd
808-524-8633

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One First St
Los Altos, CA 94022
415-948-7033
Contact: Don Johnston
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Packet processors
Cartridge drives
Intelligent (programmable) terminals
Branch Sales Offices:
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Casey-Johnston Inc
One First St
415-941-6892

INTERACTIVE SYSTEMS/3M
3980 Varsity Dr
Ann Arbor, MI 48104
313-973-1500
Contact: James Mathews
■ Products & Services
Front-end processors
Inverse multiplexers
Minicomputers
Multiplexers, frequency division
Multiplexers, time division
Multiplexers, intelligent
Remote network processors
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
Modems, voice-grade, high-speed
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Computer/communications interfaces
Data communications consultants
Data com. softw, distr. dp systems vend.
Maintenance organizations

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Bldg 220-3NE 3M Center
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14761 Califa St
Van Nuys, CA 91411
213-787-6800
Contact: W K Geist
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Cassette drives

INTERFACE MECHANISMS INC
4405 Russell Road
Lynnwood, WA 98036
206-743-7036
Contact: Dick Dilling
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205-883-8660

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644 N Country Club Dr E
602-833-0061

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2950 Airway D-S
714-540-2312

CA Los Angeles
Data Systems Marketing
6820 Latrjre 211
213-641-2050

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8360 Clairmont Mesa Blvd 108
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2680 Bayshore Frontage Rd 810
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415-391-1111

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FL Melbourne
W A Brown Instruments
Box 1406
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W A Brown Instruments
1325 E Tennessee St
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317-247-1316

KS Overland Park
Ramsey Assoc
6900 80th St
913-649-6996

LA Mandeville
W A Brown Instruments
Box 786
504-626-9701

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Ray Stevens
34 Fuller Rd
617-653-8655

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314-569-1406

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919-682-2383

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918-743-6892

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Data Systems Marketing
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503-640-4883

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1201 St Andrews Rd
803-798-8070

TN Oak Ridge
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615-482-5761

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TX Richardson
Comspec Inc
Box 693
214-234-4137

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Comspec Inc
Box 15911
512-837-3881

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1864 S State St 160
801-487-8281

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206-827-0402

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30-6323

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1 Expo Ct Mt Waverly
03-543-2076

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C N Rood SA
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Casilla;3er. Piso
40962

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Rua Jaguaribe 126/28
222-8697

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396713

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02 60.73.184

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530-91 Osaka
06-204-5588

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CN Rood BV
Cort VD Lindenstraat 11-13
070-996360

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Oslo
Morgenstjerne & Co A/S
Konghellegate 3
02 356110

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Teleinstrument AB
Maltesholmsvagen 138
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Coasin Uruguay SRL
Cerrito 617 4° Piso
91 79 78

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462 Jackson Plaza
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313-769-5900
Contact: Clyde Kloack
■ Products & Services
Audio response units
Data entry terminals, portable
Remote line printers
Computer/communications interfaces

**INTERNATIONAL BUSINESS
MACHINES**
DATA PROCESSING DIV
1133 Westchester Ave
White Plains, NY 10604
Contact: Don Butters

INTERNATIONAL COMMUNICATIONS SCIENCES

9000 Mason Ave
Chatsworth, CA 91311
213-998-1300
Contact: Harvey Cohen
■ Products & Services
Multiplexers, intelligent
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Data security devices, encoder/decoders
Voice digitizers

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CA Los Angeles
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212-344-4180

PA Philadelphia
Int Com Sciences
215-647-9604

BELGIUM
Brussels
Telindus
02-6484470

ENGLAND
London
Int Com Sciences
44-1-623-5133

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Telemation
49-611-723418

SWITZERLAND
Geneva
Lier Electronics SA
41-22-437950

INTERNATIONAL COMPUTER PRODUCTS

2925 Merrell Rd
Dallas, TX 75229
214-350-6951
Contact: Attn: VP Mktg
■ Products & Services
Cassettes
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Disc drives, floppy
Disc drives, large
Tape punch/reader, paper
Bar code readers
Intelligent (programmable) terminals
Code converters

INTERNATIONAL DATA SCIENCES

7 Wellington Road
Lincoln, RI 02865
401-333-6200
Contact: Raymond B Sepe
■ Products & Services
Line sharing units
Modem sharing units
Port sharing units
Line drivers
Modems, limited distance
Data content monitors
EIA cable testers
Error rate detectors
Protocol analyzers
Response-time monitors
Tech control centers
Cables, electrical prefabricated extender
Data jacks and plugs
Modem eliminators
Select. & transfer equip., monitor & test
switch. equip.
Select. & transfer equip., patch. equip.
Switches, data communications, automatic
Switches, data communications, manual
Branch Sales Offices:
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Transalaska Data Systems
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907-344-1141

- AZ Scottsdale
PLS Assoc Inc
7120 E 4th St
602-994-5461
- CA Anaheim
Moxon Electronics
1440 S State College Blvd
714-635-7600
- DC Silver Spring
Terminal Networks Inc
118 Eldrid Dr
301-622-3535
- FL Orlando
Col-Ins-Co Inc
Box 13189
305-423-7615
- FL Hallandale
Emec Inc
2350 S 30 Av
305-457-9400
- IL Rolling Meadows
SEA
1225 Carnegie St
312-255-4820
- MA Winchester
J & J Assoc
225 East St
617-729-5770
- NJ Kenilworth
Star Technical Sales Co
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- NY East Syracuse
Ossman Instruments Inc
6666 Old Collamer Rd
315-437-6666
- OH Dayton
Ashby Assoc Inc
4130 Linden Av
513-252-5627
- PA Valley Forge
J E Cuesta & Co Inc
Box 188
215-265-5800
- TX Houston
Data Aids Assoc
1440 N Loop
713-862-6685
- WA Seattle
Rush S Drake Assoc Inc
6133 Sixth Ave S
206-763-2755
- BRITISH COLUMBIA, CANADA
North Vancouver
National Electro Lab Ltd
1536 Columbia St
604-985-0511
- ONTARIO, CANADA
Vanier ON
Electrodesign Ltd
190 Montreal Rd
613-745-0541

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1001 E Ball Road Box 3117
Anaheim, CA 92803
714-635-7210
Contact: Tom Western
■ Products & Services
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Graphic display terminals
Intelligent (programmable) terminals
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Telescriber
Branch Sales Offices:
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Interstate Elect Corp
2700 Cumberland Pkwy
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- IL Schaumburg
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1745 Jefferson Davis Hwy
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- VA Arlington
Interstate Elect Corp
1901 N Ft Meyer Dr
703-243-6660

INTERTEC DATA SYSTEMS CORPORATION

2300 Broad River Rd
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Contact: Ron L. Wells
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Intelligent (programmable) terminals
Video data terminals (KSR)

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Six Vine Brook Park
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617-273-0950
Advertising pages 63,89
Contact: Charles Altman
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Modem sharing units
Multiplexers, time division
Port sharing units
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
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Data access arrangement devices
Select. & transfer equip., patch. equip.
Select. & transfer equip., reconfig. equip.
Switches, data communications, automatic
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213-640-1446
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14 Perimeter Center E
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Intel Inc
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301-770-2272

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Intel Inc
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- MO Creve Coeur
Intel Inc
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Two Frederick St
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617-879-5955
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Data security devices, softw. security mod.
Data communications consultants
Data com. softw, distr. dp systems vend.

ITT BUSINESS SYS & COMM GRP

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W C Geddings Co
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303-452-2572
FL St Petersburg
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Communication Equipment Brokers
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77 Tarrytown Rd
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201-727-2333

TN Nashville
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615-244-1793

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13999 Goldmark
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1515 W 14th St
Tempe, AZ 85281
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Contact: T B Towers
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Interactive systems
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Video data terminals (KSR)

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CA Century City
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CA San Francisco
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CT E Hartford
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203-569-4915

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305-442-2645

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617-890-9595

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745 5 Ave
212-751-0500

NY Rochester
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716-461-5700

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PA King of Prussia
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ITT Courier Terminal Systems Inc
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TX Houston
ITT Courier Terminal Systems Inc
3131 Briarpark Dr
713-780-0309

TX Austin
ITT Courier Terminal Systems Inc
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New York, NY 10004
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Contact: John Cornell
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Contact: Attn: VP Mktg
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Data com. softw, independ. softw houses

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012 263-2122

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011 04 923 46255

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90 627252

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08 21 84 10

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2121 S El Camino Real Ste 615
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415-573-5475

Advertising page 77

Contact: John Kapusi

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Modem sharing units

Line drivers

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EIA cable testers

Error rate detectors

Response-time monitors

Network management centers

Tech control centers

Telecommunications monitor

Computer/communications interfaces

Modem eliminators

Power supplies, uninterruptible; line correctors, etc.

Select. & transfer equip., monitor & test switch, equip.

Select. & transfer equip., reconfig. equip.

Switches, data communications, automatic

Switches, data communications, manual

Data communications consultants

Branch Sales Offices:

ONTARIO, CANADA

Ottawa
Allcom Data Ltd
1980 Merivale Rd
613-226-2340

GREECE

Athens
ACS Prime Computer
7 Dion Areopagitou Str

NETHERLANDS

Nederland
Simac Electronics BV
5503 HR Veldhoven
040-533725

SWEDEN

Solna
Svea Data Comm
Box 3004
08-82-03 35

SWITZERLAND

Geneva
Interep SA
4 cours des Bastions
022/20 83 46

TAIWAN

Taipei
Sun Moon Star Ent Co Ltd
Box 3669
7819495

KAUFMAN RESEARCH

14100 Donelson Pl
Los Altos Hills, CA 94022
415-948-3777

Contact: Marc T Kaufman

■ Products & Services

Concentrators

Front-end processors

Inverse multiplexers

Message switchers

Multiplexers, intelligent

Packet processors

Remote network processors

Protocol converters

Data communications consultants

Data com. softw, comms processor vend.

Data com. softw, independ. softw houses

Branch Sales Offices:

CA Redondo Beach
Group III Electronics
2615 Manhattan Beach Bl
213-973-7844

CA Sunnyvale
Group III Electronics
757 E Evelyn Ave
408-245-4392

CA San Diego
Group III Electronics
8716 Production Ave
714-578-1120

HI Honolulu
Gray Assoc
691 Kalanipuu St
808-395-8669

OR Portland
Pacific Northwest Electronics
2035 SW 58
503-292-3505

TX El Paso
DBM Assoc
Box 191
915-584-1795

WA Bellevue
Pacific Northwest Electronics
14264 SE Eastgate Way
206-641-6444

AUSTRIA

Austria
Neve Organisation mas chinen,
GMBH
Untere Donaustrasse 13-15;1020
Wien
02-2224-84-14

KEYLINE INC

3260 Scott Blvd
Santa Clara, CA 95051
408-246-6830
Contact: Mark G Callin
■ Products & Services
Cassettes
Discs, floppy
Tape, magnetic

Branch Sales Offices:

CA Los Alamitos
Keyline Inc
3532 Katella Ave
213-596-3522

NY Commack
Keyline Inc
85 Austin Blvd
516-543-3223

TX Dallas
Keyline Inc
13101 Preston Rd
214-233-2628

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

KEYTEK INSTRUMENT CORP

12 Cambridge St
Burlington, MA 01803
617-272-5170

Contact: Peter Richman

■ Products & Services

Power supplies, uninterruptible; line correctors, etc.

Branch Sales Offices:

CA Santa Clara
Mollard Mktg
3350 Scott Blvd
408-727-2050

CA Thousand Oaks
Max Shovlowsky
311 Corrine Hill Ct
805-498-6547

CT Mt Carmel
Scientific Devices CT
3074 Whitney Ave
203-248-9361

GA Doraville
Kemp Instruments
3425 Regal Woods Dr
404-938-5973

IA LaGrange
PVA Co
521 S LaGrange Rd
312-579-9300

MA Waltham
Scientific Devices NE
181 West St
617-890-2252

MN Minneapolis
Heimann Co
5603 Lyndale Ave
612-861-6051

NJ Parlin
JMR Sales
3145 Bordentown Ave
201-727-5335

NC Winston Salem
Radco
614 First Union Natl Bank Bldg
919-722-9671

OH Columbus
Measurement Instruments
2840 Fisher Rd
614-274-1144

PA Philadelphia
Technical Instrument Sales
523 Bethlehem Pk
215-836-2222

TX Dallas
True Technology
Box 12688
214-691-7870

VA Springfield
Scientific Devices DC
7643 Fullerton Rd
703-451-6500

WA Seattle
Eicher Richards
2727 NE Blakeley St
206-523-7888

KIDDE BELLEVILLE/DIV WALTER KIDDE AND CO

675 Main St
Belleville, NJ 07109
201-759-5000
■ Products & Services
Fire Detection/Protection Equipment

KLEINSCHMIDT

DIV SCM

450 Lake Cook Rd
Deerfield, IL 60015
312-945-1000
Contact: Don Myers
■ Products & Services
DDP systems
Tape punch/reader, paper
Teleprinters, impact
Teletypewriters
Data com. softw, distr. dp systems vend.
Lease and resale organizations

KYBE CORP

132 Calvary St
Waltham, MA 02154
617-899-0012
Contact: Richard Hurley
■ Products & Services
Cassettes
Discs, floppy
Tape, magnetic
Furniture, cabinets, terminal enclosures

Branch Sales Offices:

CA N Hollywood
Kybe Corp
4101 Lankershim Blvd
213-980-8365
IL Oak Brook
Kybe Corp
1301 W 22 St
312-323-2184
NY New York
Kybe Corp
1 Penn Plaza
212-594-9273

LAMBDA ELECTRONICS

515 Broad Hollow Rd
Melville, NY 11747
516-694-4200
Contact: S J Madden
■ Products & Services
Electrical-parameters test equipment
Power supplies, uninterruptible; line
correctors, etc.

LANTOR INC

8055 Manchester Ave
Playa Del Rey, CA 90291
213-821-0642
Contact: Victor A Jauch
■ Products & Services
Minicomputers
Acoustic couplers
Add-on main memory
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Tape, magnetic
Tape punch/reader, paper
Intelligent (programmable) terminals
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating

LEAR SIEGLER INC**SIERRA ELECTRONIC DIV**

3885 Bohannon Dr
Menlo Park, CA 94025
415-321-5374
Contact: D Rowley
■ Products & Services
Electrical-parameters test equipment
Error rate detectors
Response-time monitors

Branch Sales Offices:

AZ Scottsdale
Lear Siegler-Sierra Elect Div
8702 E Highland Av
602-994-8253
GA Atlanta
Lear Siegler-Sierra Elect Div
2438 Melinda Dr
404-633-8638
GA Conyers
Lear Siegler-Sierra Elect Div
1790 Holmes Dr
404-483-1518

GA Stone Mountain
Lear Siegler-Sierra Elect Div
499 Rock Shadow Ct
404-469-8436
MO St Louis

Lear Siegler-Sierra Elect Div
12853 Foxspur Ct
314-741-7411
NC Burlington

Lear Siegler-Sierra Elect Div
Box 2448
919-584-5492
PA Dallas

Lear Siegler-Sierra Elect Div
RD 5 Box 378-4
717-675-4882
UT Sandy

Lear Siegler-Sierra Elect Div
965 Statice Av
801-571-2433

LEAR SIEGLER INC/DATA PRODUCTS DIV

714 N Brookhurst
Anaheim, CA 92803
714-774-1010
■ Products & Services
Teleprinters, impact
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

CA Anaheim
Lear Siegler Inc
714 N Brookhurst
714-774-1010
CA San Jose
Lear Siegler Inc
800 Chaucot
408-263-0506
IL Elmhurst
Lear Siegler Inc
970 N Oaklawn Ave
312-253-2226
MD Hyattsville
Lear Siegler Inc
7515 Annapolis Rd
301-262-8234
PA Newtown
Lear Siegler Inc
195 Justice Dr
215-968-0112
TX Houston
Lear Siegler Inc
8401 Westheimer Rd
713-785-4321

LEASAMETRIC

1164 Triton Dr
Foster City, CA 94404
415-574-4441
Contact: Murray Berger
■ Products & Services
Acoustic couplers
Protocol analyzers
Response-time monitors
Data entry terminals, portable
Digital plotters
Graphic display terminals
Intelligent (programmable) terminals
Interactive systems
Teleprinters, impact
Teleprinters, non-impact
Video data terminals (KSR)
Video data terminals (RO)
Lease and resale organizations
Used equipment

Branch Sales Offices:

CA Anaheim
Leasametric
1630-A S Sunkist Dr
714-634-9525

CA Sun Valley
Leasametric
11754 Roscoe Blvd
213-768-4200

CA San Diego
Leasametric
7292 Opportunity Rd
714-565-7475

CA Foster City
Leasametric
1164 Triton Dr
415-574-4441

CO Denver
Leasametric
7100 Broadway
303-429-7900

FL Orlando
Leasametric
7665 Currency Dr
305-857-3500

GA Norcross
Leasametric
1756 Wilwat Dr
404-449-6123

IL Elk Grove Village
Leasametric
2273 E Devon Av
312-595-2700

MD Gaithersburg
Leasametric
9204 Gaither Rd
301-948-9700

MA Woburn
Leasametric
24 Cummings Pk
617-935-7780

MN Burnsville
Leasametric
1137 Riverwood Dr
612-894-6060

NJ Allendale
Leasametric
2 Pearl Ct
201-825-9000

NY Plainview
Leasametric
84 Newtown Plaza
516-293-5881

NY New York
Leasametric
330 W 34 St
212-594-6900

OH Dayton
Leasametric
5653 Webster St
513-898-1707

PA Folcroft
Leasametric
701 Ashland Ave
215-583-2000

TX Houston
Leasametric
10400 West Office Dr
713-977-5990

TX Dallas
Leasametric
13721 Omega Rd
214-661-9193

WA Redmond
Leasametric
2529 152 Ave NE
206-883-6510

ONTARIO, CANADA

Mississauga
Leasametric
7040 Torbram Rd
416-676-1897

LEXICON INC

60 Turner St
Waltham, MA 02154
617-891-6790
Contact: Jack Letscher
■ Products & Services
Graphic display terminals
Intelligent (programmable) terminals
Terminal controllers
Video data terminals (RO)

Branch Sales Offices:

CA Sunnyvale
Inter-Link Systems
580 Weddell Dr
408-744-1930

CA Palos Verdes
Edwards Assoc
608 Silver Spur Rd
213-541-2600

IN Munster
Bexdata Ltd
8224 Calumet Ave
312-221-1411

MA Needham
Eastmark
10 Kearney Rd
617-449-0050

LEXIDATA CORP

215 Middlesex Turnpike
Burlington, MA 01803
617-273-2700
Contact: Martin Duhms
■ Products & Services
Graphic display terminals

LEXITRON CORP

9600 De Soto Ave
Chatsworth, CA 91311
213-882-5040
Contact: VP/Mktg
■ Products & Services
Word recognition units
Word processors, communicating

Branch Sales Offices:

AK Juneau
Capital Office Supply
174 S Franklin St
907-586-2830

AZ Phoenix
Lexitron Corp
201 N Central Ave
602-271-0406

AR Little Rock
Automated Business Systems
6701 W Twelfth St
501-663-6304

CA Los Angeles
Lexitron Corp
3550 Wilshire Blvd
213-487-3191

CA Sacramento
Lexitron Corp
1540 Riverpark Dr
916-929-2074

CA San Diego
Lexitron Corp
600 B St
714-239-5177

CA San Francisco
Lexitron Corp
One Maritime Plaza
415-781-2450

CA Santa Clara
Lexitron Corp
1400 Coleman Ave
408-247-5676

CA Santa Ana
Lexitron Corp
1633 E Fourth St
714-547-9684

CO Colorado Springs
Automated Business Systems
1235 Lake Ave
303-576-8282

CO Denver
Automated Business Systems
55 W Fifth Ave
303-825-1348

FL Ft Lauderdale
Executive Systems Inc
5325 N Dixie Hwy
305-772-4754

FL Tampa
American Business Systems
5123 Nebraska Ave
813-238-9564

GA Atlanta
OMNI International
Suite 1160
404-525-7426

ID Boise
Hubco Data Products Corp
152 S Cole
208-377-2320

IL Chicago
Lexitron Corp
180 N La Salle St
312-263-0930

IL Des Plaines
Lexitron Corp
999 E Touhy Ave
312-263-0930

KS Kansas City
Brelsford Office Systems Inc
1118 N Seventh St
913-321-2662

LA Baton Rouge
EWA Corp
1885 Wooddale Blvd
504-927-9070

MD Baltimore
Lexitron Corp
201 N Charles St
301-244-0455

MA Boston
Lexitron Corp
One Faneuil Hall Marketplace
617-523-1061

MI Detroit
IBEC Inc
14844 Puritan
313-272-3160

MN Minneapolis
McNallan's Office Products
4074 W Broadway
612-535-2392

MO St Louis
Automated Typing Systems Inc
1790 S Brentwood Blvd
314-962-9002

MT Helena
Capital Office Equipment Inc
323 N Last Chance Gulch
406-442-3480

NJ East Orange
Raytheon Data Systems
60 Evergreen Pl
201-678-4965

NM Albuquerque
Total Business Systems
4801 Indian School Rd NE
505-265-3511

NM Gallup
Stevens & Heights CPA
101 W Aztec
505-722-4433

NM Roswell
Computer Solutions
500 N Main St
505-622-6910

NY Lake Success
Raytheon Data Systems
3000 Marcus Ave
516-488-6660

NY New York
Lexitron Corp
600 Third Ave
212-986-9220

OH Cincinnati
Raytheon Data Systems
11499 Chester Rd N 402
513-772-2204

OH Columbus
Lexitron Corp
6530 Singletree Dr
614-436-1000

OK Oklahoma City
Automated Business Systems
2919 United Founders Blvd
405-848-4863

OK Tulsa
Automated Business Systems
4949 E 68 St
918-749-0312

OR Eugene
National Photocopy Corp
3629 Franklin Blvd
503-747-0123

OR Portland
CTR Business Systems
825 SW 14 St
503-227-2414

PA Philadelphia
Lexitron Corp
1845 Walnut St
215-567-6820

PA Upper St Claire
International Office Machines
400 Sainte Claire Plaza
412-746-2912

TX Austin
Lexitron Corp
7800 Shoal Creek Blvd
512-454-5633

TX Dallas
Lexitron Corp
10300 N Central Expwy
214-696-3384

TX Houston
Lexitron Corp
14825 St Mary's
713-496-3520

TX San Antonio
Lexitron Corp
110 Avenue E
512-223-3004

UT Murray
Hubco Data Products Corp
5248 S Pinemont
801-262-3457

VA Baileys Crossroads
Lexitron Corp
5707 Seminary Rd
703-820-2700

VA Rosslyn
Lexitron Corp
1500 Wilson Blvd
703-527-0654

WA Redmond
Lexitron Corp
14852 NE 31 Cir
206-882-1403

WA Spokane
ABC Office Products
2928 Nevada St
509-489-4444

WI Brookfield
Lexitron Corp
200 Executive Dr
414-784-7711

WI Oshkosh
Oshkosh Office Supply Co
923 S Main St
414-235-8200

LIVERMORE DATA SYSTEMS INC

2050 Research Dr
Livermore, CA 94550
415-447-2252
Contact: Gilbert Marguth
■ Products & Services
Port selectors
Acoustic couplers
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Cables, electrical prefabricated extender

Branch Sales Offices:

CA Sunnyvale
R C Data
528 Waddell
408-745-7410

CO Denver
PAR
3333 Quebec
303-355-2363

FL Largo
Synergetic Reprs Inc
13498 Ulmerton Rd
813-596-5331

MA Winchester
J & J Assoc Inc
225 East St
617-729-5770

NM Albuquerque
PAR
2610 San Mateo NE
505-881-5000

NY Roslyn Heights
Travco
142 Mineola Ave
516-621-3223

OH Dayton
E V Swenson
5250 Far Hills Ave
513-435-2772

VA Arlington
Gans & Pugh Assoc Inc
2062 14 St N
703-527-3262

WA Bellevue
DPM Inc
515 116 Ave NE
206-453-9082

For further catalog information, turn to
Update Service Card, page 201.

LM ERICSSON
TELECOMMUNICATIONS
100 Crossways Park West
Woodbury, NY 11797
516-364-1111
Contact: James Brunner
■ Products & Services
Fiber optic systems
Microwave/Laser Systems, Private
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed

LOCKHEED ELECTRONICS COMPUTER SYST DIV

Route 22
Plainfield, NJ 07061
201-757-1600
Contact: R A Slayman
■ Products & Services
Minicomputers
DDP systems

Branch Sales Offices:

CA Daly City
Lockheed Elect
333 Gellert Blvd
415-992-2714

NJ Pennsauken
Lockheed Elect
6525 S Crescent Blvd
609-662-5640

TX Houston
Lockheed Elect
7000 Regency Sq Blvd
713-783-9242

VA Arlington
Lockheed Elect
1911 N Fort Myer Dr
703-525-3600

LOGICAL MACHINE CORPORATION

1294 Hammerwood Ave
Sunnyvale, CA 94086
408-744-1290
Contact: Jerome E Clarey
■ Products & Services
Minicomputers
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Interactive systems

Branch Sales Offices:

GA Atlanta
Logical Machine Corp
2295 Parklake Dr NE
404-491-0351

OH Columbus
Logical Machine Corp
2700 E Dublin-Granville Rd
614-890-8300

LORAIN PRODUCTS COPORATION

1122 F St
Lorain, OH 44052
216-288-1122
Contact: Attn: VP Mktg
■ Products & Services
Telephone companies
Power supplies, uninterruptible; line
correctors, etc.

Branch Sales Offices:

CA Mountain View
DSM
2564 Fairbrook Dr
415-968-0542

GA Stone Mountain
DSM
4900 Lewis Rd
404-934-1341

IL Chicago
DSM
245 Roosevelt Rd
312-231-5775

NE Omaha
DSM
14727 Arbor St
402-330-2754

NV Las Vegas
DSM
3025 La Canada
702-733-0936

NC High Point
DSM
3436 Imperial Dr
919-869-3436

PA Philadelphia
DSM
1633 Conlyn St
215-276-8282

TN Gallatin
DSM
254 Hickory Harbor Dr
615-244-2800

TX Arlington
DSM
722 Great SW Pkwy
817-640-1134

LORLIN INDUSTRIES INC

Precision Rd
Danbury, CT 06810
203-744-0096
Contact: Doug Blakeslee
■ Products & Services
Electrical-parameters test equipment

Branch Sales Offices:

CA Sunnyvale
Lorlin Industries Inc
1233 Midas Way
408-733-3010

TX Dallas
Lorlin Industries Inc
13531 N Central Expwy
214-690-8914

LRC INC

Technical Research Pk
Riverton, WY 82501
307-856-4821
■ Products & Services
Remote line printers
Teleprinters, impact

Branch Sales Offices:

CA Sherman Oaks
Electronic Marketing Specialists
14006 Ventura Blvd
213-990-4244

CA Los Angeles
Delta Mutual Sales Inc
5318 McConnell Ave
213-391-0451

CO Denver
PLS Assoc
7418 E Princeton Ave
303-773-1218

FL Orlando
Gra-Mar Inc
Box 20493
305-894-3351

MD Timonium
Marktron
57 W Timonium Rd
301-252-7111

MA Waltham
Digital Sales Assoc
9 Spring St
617-889-4300

MI Southfield
Chapman Assoc
24681 Northwestern Hwy
313-352-1645

MN Minneapolis
Bohlig & Assoc
Box 16183
612-922-7011

MO Grand View
Digital Systems Sales Inc
4006 E 137 Ter
816-765-3337

NJ Ridgewood
Hansen & Hughes
Box 806
201-652-7055

OH Centerville
Engineering Mktg Assoc
Box 449
513-433-2800

TX Houston
Unidyne Inc
6550 Tarneff
713-722-3170

WA Beaverton
ES/Chase Co
4095 SW 144
530-641-4111

WI Watertown
Durant Digital Instruments
901 S 12 St
414-261-4070

QUEBEC, CANADA
Montreal
Solid State Engineering Co
Box 355

BELGIUM
Brussels
Vector International
3044 Haas Rd

ENGLAND
Richmond, Surrey
Russett Instruments
RIL House Sheen Pk
01-9409981/2

SWITZERLAND
Zurich
MSL Micro Systems Technik AG
Badenerstrasse 296
01-242-1077

LUNDY ELECTRONICS & SYSTEMS INC
One Robert Ln
Glen Head, NY 11545
516-671-9000
Contact: Attn: VP Mktg
■ Products & Services
DDP systems
Graphic display terminals
Intelligent (programmable) terminals
Interactive systems

Branch Sales Offices:

CA Los Angeles
Lundy Electronics & Systems Inc
1411 W Olympic Blvd
213-487-4040

CA San Francisco
Lundy Electronics & Systems Inc
796 Pine St
415-981-8217

FL Pompano Beach
Lundy Electronics & Systems Inc
3901 NE 12 Ave
305-943-1500

GA Atlanta
Lundy Electronics & Systems Inc
2936M N Druid Hills Rd NE
404-296-7777

IL Chicago
Lundy Electronics & Systems Inc
222 W Adams St
312-726-3103

MA Sturbridge
Lundy Electronics & Systems Inc
Hillside Dr
617-347-7619

NY New York
Lundy Electronics & Systems Inc
76 Beaver St
212-943-2921

NC Charlotte
Lundy Electronics & Systems Inc
Wilkinson Blvd
704-394-1161

TX Houston
Lundy Electronics & Systems Inc
Box 61291
713-521-0818

VA Springfield
Lundy Electronics & Systems Inc
8001 Forbes Pl
703-321-7650

ENGLAND
Portsmouth
Lundy Electronics & Systems Inc
Ordnance Row
0705-28866

LYNN ELECTRONICS CORP
915 Pennsylvania Blvd
Feasterville, PA 19047
215-677-6700
■ Products & Services
Cables, electrical prefabricated extender
Data jacks and plugs

Branch Sales Offices:

FL Melbourne
Dickerson Eng Sales Co
Box 876 EG
305-254-1591

GA Marietta
Dahlcom Sales Co
1465 Woodhill Dr
404-424-8909

IL Lombard
RMP/McBride Corp
57A Eisenhower La S
312-932-9090

KS Overland Park
Giddings Co
11712 W 91 St
913-492-3777

LA Jefferson
EDS Assoc
213 Moss La
504-737-5170

PA Philadelphia
Stanton J Shelton
436 E Allens La
215-248-0131

PA Ambridge
R R Meinert Co
508 Merchant St
412-266-8050

RI Slatersville
Norman J Langelier Co
1433 Victory Hwy
401-766-3811

WA Auburn
Norcom Agency
Box 1072
206-852-5510

PR Caparra Heights
G & G Telecom
Box 11216
809-724-5281

CHILE
Santiago
Wica Overseas Trading Co Ltd
Box 16003/9
746634-235196

ISRAEL
Hod Hasharon
Rosenfeld-Massafi Co Ltd
Box 42
972-052-09578

PHILIPPINES
Manila
Movement Enterprises
Box SM216
58-98-51

MACROLINK
1740 E S Anaheim Blvd
Anaheim, CA 92805
Contact: Dave Vendor
■ Products & Services
Computer/communications interfaces

MAGNAVOX DATA SYSTEMS INC
2990 Telestar Ct
Falls Church, VA 22042
703-698-9250
Contact: Roy Long
■ Products & Services
Data com. softw, independ. softw houses

MAGNAVOX GOVERNMENT & IND ELECTRONICS CO
MAGNAVOX DISPLAY SYSTEMS
1313 Production Rd
Ft Wayne, IN 46808
219-482-4411
Contact: Tyler Hunt
■ Products & Services
Graphic display terminals
Intelligent (programmable) terminals
Interactive systems

Branch Sales Offices:

AL Huntsville
Flex-Comm International
Box 4530
205-533-3165

AZ Phoenix
Peripherals Inc 47
1320 E Bethany Home Rd
602-274-8999

CA Los Altos
Casey Johnston Assoc
One First St
415-941-6892

CA Canoga Park
Chandler Assoc
7032 Owensmouth Av
213-340-6103

FL Altamonte Springs
Flex-Comm International
Box 354
305-862-1402

GA Atlanta
Flex-Comm International
3379 Peachtree Rd NE
404-237-9242

IL Park Ridge
Ad-Tech Inc
701 S Lincoln Av
312-692-7320

MD Silver Spring
Spectro Systems
11141 Georgia Av
801-949-8261

MA Southboro
Victor Associates
304 Tpke Rd
617-481-3515

MI Ann Arbor
Electro Sales Assoc
719 W Ellsworth
313-665-5397

MN Eden Prairie
Scientific Devices
7032 Willow Creek Rd
612-944-3535

MO St Louis
Eng Services
8420 Delmar Blvd
314-997-1515

MO Independence
Eng Services
2425 S Chrysler
816-254-3600

NY Hicksville
F & F Assoc
161 Levittown Pkwy
516-935-1100

NC Hendersonville
Flex-Comm International
Box 1551
704-693-0920

OH Cleveland
Electro Sales Assoc
851 E 222 St
216-261-5440

OH Dayton
Electro Sales Assoc
1635 Mardon Dr
513-426-5511

PA Southampton
Gweled Sales
1225 Woods Rd
215-357-6644

PA N Versailles
Electro Sales Assoc
700 Lincoln Hwy
412-823-0932

TX Houston
System Tech Assoc
17111 Rolling Creek Dr
713-440-8340

WA Seattle
Computer Prod
2326 Sixth Av
206-624-4066

WA Kirkland
Graphics Systems Ltd
135 Lake St E
206-827-0731/0732

BRITISH COLUMBIA, CANADA
Delta
Graphics Systems Ltd
5976 Kirkwood Rd
604-943-1383

To find out who makes a
certain product, turn to
**Products & Services Direc-
tory, page 5.**

MAGNUSON SYSTEMS CORP

2500 Augustine Drive
Santa Clara, CA 95051
408-988-1450

Contact: Fred Bonnett
■ Products & Services
Concentrators
Front-end processors
Packet processors

Branch Sales Offices:

CT Westport
Magnuson Systems Corp
21 Charles St
203-226-7385

GA Atlanta
Magnuson Systems Corp
1835 Savoy Rd
404-455-6487

IL Oak Brook
Magnuson Systems Corp
2805 Bullerfield
312-323-7526

TX Dallas
Magnuson Systems Corp
8700 Stemmons
214-688-1061

VA Falls Church
Magnuson Systems Corp
7700 Leesburg Pike
703-821-0025

MAINE MANUFACTURING COMPANY

46 Bridge St
Nashua, NH 03060
800-258-1768

Contact: Red Dionne
■ Products & Services
Furniture, cabinets, terminal enclosures

MARTIN MARIETTA DATA SYSTEMS

300 E Joppa Rd
Baltimore, MD 21204
301-321-5700

Contact: Dick Schwartz
■ Products & Services
Data com. softw, independ. softw houses
Timesharing/service bureaus

Branch Sales Offices:

CA San Francisco
Martin Marietta Data Systems
One Market Pl
415-777-1430

CA Irvine
Martin Marietta Data Systems
18662 MacArthur Blvd
714-955-0235

CA Los Angeles
Martin Marietta Data Systems
2029 Century Pk E
213-552-9541

CA Torrance
Martin Marietta Data Systems
19200 South Western Ave
213-328-0660

CT S Norwalk
Martin Marietta Data Systems
50 Washington St
203-853-2733

GA Atlanta
Martin Marietta Data Systems
Three Piedmont Ctr
404-261-0641

IL Chicago
Martin Marietta Data Systems
2340 S Arlington Heights Rd
312-364-8111

MD Bethesda
Federal Systems Group
6801 Rockledge Dr
301-897-6350

NY New York
Martin Marietta Data Systems
1301 Ave of the Americas
212-541-4740

NC Winston-Salem
Martin Marietta Data Systems
514 S Stratford Rd
919-725-5133

OH Cleveland
Martin Marietta Data Systems
55 Public Square
216-687-0310

PA Philadelphia
Martin Marietta Data Systems
2000 Market St
215-963-0225

PA Pittsburgh
Martin Marietta Data Systems
5 Gateway Ctr
412-562-9405

TX Houston
Martin Marietta Data Systems
One Riverway
713-840-0394

ENGLAND
London
Hoskyns Group Ltd
91-93 Farringdon Rd
01-242-1951

MASTER SPECIALTIES CO

1640 Monrovia Ave
Costa Mesa, CA 92627
714-642-2427

Contact: Alan Margulis
■ Products & Services
Telephone companies
Audio response units
Digitized voice processors
Automatic answering units

Data security devices, personal ident. sys.
Voice adapters

Branch Sales Offices:

AL Huntsville
Brandel-Stephens
Box 4131
205-883-0445

CA Costa Mesa
MSC
1640 Monrovia Av
714-642-2427

FL Orlando
Brandel-Stephens & Co
749 N Garland Ave
305-425-3202

GA Atlanta
Brandel-Stephens & Co
3110 Maple Dr
404-261-7579

IL Oak Park
Splon Assoc
1124 S Clarence
312-383-6580

IA Cedar Rapids
Technical Representatives Inc
1930 St Andrews Dr NE
319-393-5510

KS Lenexa
Technical Representatives Inc
8245 Nieman Rd

MD Glen Burnie
Tri Mark Inc
95 Aquahard Rd
301-768-2800

MA Andover
Richard Purinton Inc
28 Park St
617-475-7055

MI Ann Arbor
O-M Sales Inc
3003 Washentaw
313-973-9450

MN Minneapolis
Scott Electronic Sales
5209 W 60 St
612-929-2985

MO Hazelwood
Technical Representatives Inc
320 Brooks Dr
314-731-5200

NY Jericho
Electro-Rep
366 N Broadway
516-938-0540

NY Pittsford
Noeth-Honsinger
Box 305
716-586-9002

NC Greensboro
Brandel-Stephens
1400 Battleground
919-274-6952

OH Wickliffe
O-M Sales Inc
30214 Lakeland Blvd
216-585-3659

PA Newtown Square
MSC
11 St Albans Cir
215-356-1050

PA Huntingdon Valley
Inacker Sales
One Fairway Plaza
215-947-5660

PA Waterford
Bacon Electronic
115 S High St
814-796-2381

TX Dallas
Kruvand Assoc Inc
10300 N Central Exprwy
214-691-4592

TX Houston
Kruvand Assoc Inc
7333 Harwin Dr
713-780-9710

ONTARIO, CANADA
Etobicoke
RFQ Limited
385 The West Mall
416-626-1445

NETHERLANDS
Zaandam
MSC
Box 1185
075-169744

MATHEMATICA PRODUCTS GROUP

14 Washington Rd
Princeton, NJ 08550
609-799-2600
Contact: Janet Levy
■ Products & Services
Data communications consultants
Data com. softw, independ. softw houses

Branch Sales Offices:

CA El Segundo
Mathematica Products Group
999 N Sepulveda Blvd
213-640-0243

CA Corte Madera
Mathematica Products Group
240 Tamal Vista Blvd
415-924-5792

DC Washington
Mathematica Products Group
1100 Seventeenth St
202-466-3750

IL Chicago
Mathematica Products Group
825 N Michigan Ave
312-337-8161

MA Boston
Mathematica Products Group
Sixty State St
617-353-1900

NJ Princeton
Mathematica Products Group
PO Box 2392
609-799-2600

NY New York
Mathematica Products Group
122 E 42 St
212-697-9500

TX Houston
Mathematica Products Group
One Allen Center
713-651-1660

MAXELL CORPORATION OF AMERICA

60 Oxford Dr
Moonachie, NJ 07074
201-440-8020
Contact: Ted Ozawa

■ Products & Services
Cassettes
Discs, floppy
Tape, magnetic

Branch Sales Offices:

CA San Jose
Maxell Corp of America
948 Tamarack Ave
408-241-2647

CA Santa Fe Springs
Maxell Corp of America
14709 Spring Ave
213-921-1479

MAXI-SWITCH CO
9697 E River Rd
Minneapolis, MN 55433
612-755-7660
Contact: Craig G Stout

Branch Sales Offices:

CA Burlingame
Wm J Purdy Co
770 Air Port Rd
415-347-2353

CA Culver City
De Angelo Rothman & Co
12069 W Jefferson
213-827-2202

CO Denver
Williams Assoc
4614 Ironton St
303-373-4730

FL Pompano Beach
V G Sales Co Inc
2500 NW 16 Ln
305-971-0900

IL Bensenville
Central Sales
358 Country Club Dr
312-595-2110

KS Shawnee Mission
BC Electronics
8190 Nieman Rd
913-888-6680

MA Chelmsford
Marty Flynn Assoc
190 Hunt Rd
617-256-6229

MI Grand Rapids
R P Urban & Assoc
1119 Burton St
616-245-0511

MN Minneapolis
Quantum Sales
4815 W 77
612-831-8583

NY Penfield
John Blair
15 Stone Island
716-586-1419

NC Cary
Montgomery Mktg
1212 Lane Dr
919-467-6319

OH Brecksville
Allen Nace Co Inc
7601 Parkview Rd
216-526-4323

PA Huntingdon
Knowles Assoc
1 Fairway Plaza
215-947-5641

TX Dallas
West & Assoc Inc
4300 Alpha Rd
214-661-9400

WA Seattle
Fleehart & Sullivan Inc
10109 Aurora
206-522-1533

MDB SYSTEMS INC

1995 Batavia St
Orange, CA 92665
714-998-6900
Contact: Gene Sylvester
■ Products & Services
Computer/communications interfaces

MEGADATA CORP

35 Orville Drive
Bohemia, NY 11716
516-589-6800
Contact: Joseph Maronna

■ Products & Services

Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Tape punch/reader, paper
Graphic display terminals
Intelligent (programmable) terminals
Word processors, communicating
Automatic answering units
Automatic calling units
Data com. softw, intel. term. vendors

Branch Sales Offices:

CA Encino
Megadata Corp
15910 Ventura Blvd
213-990-9777

IL Des Plaines
Megadata Corp
2200 E Devon Ave
312-296-1900

NY New York
Megadata Corp
50 Broad St
212-344-7100

TX Houston
Peripheral Products Corp
5401 Mitchelldale
713-681-8558

For further catalog information, turn to **UpDate Service Card, page 201.**

MEGATEK

3931 Sorrento Valley Blvd
San Diego, CA 92121
Contact: Peter Shaw

■ Products & Services
Graphic display terminals
Intelligent (programmable) terminals

Branch Sales Offices:

AL Huntsville
James L Highsmith & Co
3322 S Memorial Pkwy
205-881-3294

AZ Scottsdale
Dave Megegay Assoc
Box 966
602-994-9519

CA Redondo Bch
Group III Elct
2615 Manhattan Bch
213-973-7844

CA San Diego
Group III Elct
8716 Production Ave
714-578-1120

CA Sunnyvale
Group III Elct
757 E Evelyn Ave
408-245-4392

CO Littleton
Davis & Assoc Inc
709 W Littleton
303-795-1400

FL Orlando
James L Highsmith & Co
2545 Industrial Blvd
305-293-5202

FL Boca Raton
James L Highsmith & Co
4190 NW Oak Cir
305-368-9194

HI Honolulu
Aloha Assoc
1750 Kalakaua Ave
808-941-1574

IL Park Ridge
Ad-Tech Inc
701 S Lincoln
312-692-7320

MD Rockville
Telfree Assoc
414 Hungerford Dr
301-340-7337

MA Newton
EMC Corp
381 Elliot St
617-244-4740

MI Madison Hts
WKM Assoc Inc
345 W Girard
313-588-2300

MN Chanhassen
Professional Mktg Serv
Box 58
612-474-5939

MO Grandview
Digital Sys Sales Inc
4006 E 137 Ter
816-765-3337

NM Albuquerque
Data Handling Co Inc
218 Manzano NE
505-268-4364

NY Plainview
Trac Assoc Mktg Inc
88 Sunnyside Blvd
516-938-7664

NY Rochester
RG Eng
3100 Monroe Ave
716-385-3021

NC Charlotte
James L Highsmith & Co
3733 Monroe Rd
704-333-7743

OH Cleveland
WKM Assoc Inc
16141 Puritas Ave
216-267-0445

OH Dayton
WKM Assoc Inc
7913 S Suburban Rd
513-434-7500

PA Coopersburg
Pleasant Valley Assoc
Box 405
215-346-8684

PA Pittsburgh
WKM Assoc Inc
90 Clairton Blvd
412-892-2953

TX Dallas
Remtek Inc
13500 Midway Rd
214-387-2855

WA Bellevue
DPM Assoc Inc
515 116 Ave NE
206-453-9082

ONTARIO, CANADA
Weston ON
Megatronix Ltd
100 Penn Dr 1
416-742-8015

AUSTRALIA
Rydalmere NSW
Pacific Commun Pty Ltd
4 Euston St
2116 638 6400

BELGIUM
1150 Bruxelles
Regulation Mesure Sprl
Av R Vandendriessche 73
771 2020

DENMARK
DK2610 Rodovre
Datalog A/S
Roskildevej 390
009 45 41 51 33

ENGLAND
Blackburn Lancs BB15SN
Terminal Display Sys Ltd
Hillside Whitebirk Estate
0254 66 22 44

FINLAND
Helsinki 40
Jertec Oy
Box 18; SF 00401
90 585133

FRANCE
92606 Asnieres
Metrologie
La Tour d'Asnieres 4; Ave
Laurent-Cely
1 791 44 44

GERMANY, WEST
D4060 Viersen 1
CIS GmbH & Co KG
Krefelderstrasse 172
02161/17081

GERMANY, WEST
D2000 Hamburg 50
CIS GmbH & Co KG
Holstenstrasse 1
040/310824

GERMANY, WEST
D8000 Munich 21
CIS GmbH & Co KG
Westendstrasse 170
089/470 2702

GERMANY, WEST
D7321 Adelberg
CIS GmbH & Co KG
Fruehlingstrasse 27
07166/647

GREECE
Athens 601
Infodata Comp Sys Ltd
5 Koniari St
642 368 5948

HONG KONG
Watsons Estate
Dataprep Ltd
Block B 14 Fl
5 717231

INDIA
Bombay 400 021
Ravi & Ashok Entrps
303/304 Regent Chambers; Nariman
Pt
203314/230345

ISRAEL
Givataim
Team Compu & Sys Ltd
5 Tefutzot Israel St
03 77 1031

ITALY
San Mauro Torinese; Autoport
Pescarito
Scias Sr 1
Corso Lombardia 20

JAPAN
Minato Ku Tokyo 105
Marubeni
16-16 Toranomon 1 Chome
02 507-4476-4481

NETHERLANDS
Zeist
Datacare BV
Huis ter Heideweg 28
03404-21344

NORWAY
Oslo 5
Morgenstjerne & Co A/S
Konghellegate 3

SOUTH AFRICA
Pretoria 0001
Perseus Comp & Automation
Box 3986
47 27873

SPAIN
Madrid
Hispano Elct
Poligono Industrial
Urtinsa; Apartado de Correos 48

SWITZERLAND
CH1201 Geneva
Marli SA
14 Rue de l'Ancien Port
022 32 97 20

TAIWAN
Taiwan
Syscom
Box 48-130 Taipei
02 702 6284 6285

Know the product name? Turn to **Products & Services Directory, page 5** to find out who makes it.

MEMODYNE CORP
220 Reservoir St
Needham Heights, MA 02194
617-444-7000
Contact: Kevin M Corbett
■ Products & Services
Cassettes
Cassette drives
Branch Sales Offices:

AL Huntsville
Col-Ins Co
800-327-6600

AZ Phoenix
Zeus
800-528-4512

CA Los Angeles
Cain Tech
213-476-2251

CA Orange
Cain Tech
714-997-7311

CT Canton Center
Tekdata
203-693-0719

FL Orlando
Col-Ins Co
305-423-7615

FL Coral Springs
Col-Ins Co
800-432-4480

GA Clarkston
Col-Ins Co
800-327-6600

HI Honolulu
Hawaii Data Systems
808-946-1533

IL Elmhurst
Scott Assoc
312-279-5681

KS Shawnee Mission
Midtec Assoc
913-441-6565

MD Linthicum Heights
K D Assoc
301-636-1151

MA Wakefield
Tekdata
617-245-5940

MI South Lyons
Infinity
313-437-2705

MO Florissant
Midtec Assoc
314-837-5200

NM	Albuquerque Zeus 505-268-3941	Video data terminals (KSR) Video data terminals (RO) Computer/communications interfaces Data com. softw, comms processor vend.	MN	Bloomington One Appletree Sq 612-835-6635
NY	Elmont Crane & Egert Corp 516-488-2100	Branch Sales Offices:	MO	St Louis 12115 Lackland Rd 314-576-4570
NY	Clark Mills KLM/Garner 315-853-6126	AL Birmingham 110 Office Park Dr 205-870-4246	NE	Omaha 7701 Pacific 402-391-0486
NY	Syracuse KLM/Garner 315-458-6214	AZ Phoenix 2323 N Third St 602-254-5466	NJ	West Orange 59 Main St 201-325-0164
NY	Pittsford KLM/Garner 716-381-8350	AR Little Rock 1515 West 7 501-374-0279	NY	Albany 125 Wolf Rd 518-458-7099
NC	Winston-Salem Col-Ins Co 800-327-6600	CA Anaheim 305 Crescent Way 714-776-8571	NY	Williamsville 5500 Main St 716-631-5410
OH	Cleveland Geotronics 216-526-2535	CA Long Beach 2501 E 28 St 213-595-4656	NY	New York 1700 Broadway 212-541-7780
OH	Columbus Geotronics 614-457-8472	CA Los Angeles 11340 W Olympic Blvd 213-473-0811	NY	Liverpool 897 North St 315-451-4330
OK	Oklahoma City Data Mkt Assoc 405-528-6071	CA San Diego 8334 Clairemont Mesa Blvd 714-571-1133	NC	Charlotte 2 Woodlawn Green 704-527-4923
OR	Portland Topp Engr Sales corp 503-244-7265	CA San Francisco 300 Montgomery St 415-397-9496	NC	Greensboro 3407 W Wendover Ave 919-294-4374
TX	Houston Data Mkt Assoc 713-780-2511	CA Santa Clara 3255-2 Scott Blvd 408-987-1450	OH	Cincinnati 644 Linn St 513-621-7120
TX	Dallas Data Mkt Assoc 214-661-0300	CO Denver 789 Sherman 303-837-0205	OH	Valley View 5811 Canal Rd 216-447-0780
TX	San Antonio Data Mkt Assoc 512-828-0937	CT Old Greenwich 1445 E Putnam Ave 203-637-5241	OH	Columbus 1395 E Dublin-Grandville Rd 614-885-0415
TX	Austin Data Mkt Assoc 512-451-5174	CT East Hartford 111 Founders Plaza 203-568-1370	OH	Columbus 3901 Barrett 919-787-7660
WA	Bellevue Topp Engr Sales Corp 206-747-5400	DC Mclean 1970 Old Chain Bridge Rd 703-821-3300	OK	Oklahoma City 420 NW 13 405-235-1245
BRITISH COLUMBIA, CANADA		FL Jacksonville 4814 Phillips Hwy 904-731-1744	OK	Tulsa 9810 E 42 St 918-622-6743
Vancouver Canadian Dynamics Nova Ltd 604-324-3116		FL Hialeah 1840 W 49 St 305-558-9320	OR	Portland 7100 SW Hampton St 503-620-4800
ONTARIO, CANADA		GA Atlanta 50 Executive Park Dr NE 404-321-0200	PA	King of Prussia 741 5th Ave 215-337-1050
Toronto Vitel Electronics 416-622-6300		IL Lombard 335 Eisenhower La S 312-620-3200	PA	Pittsburgh 1910 Cochran Rd 412-531-8711
MEMOREX-CFI DIV		IL Peoria 2214 N University 309-688-2406	RI	Providence 933A Waterman 401-728-1860
305 Crescent Way Anaheim, CA 92803 714-776-8571 Contact: Attn: VP Mktg.		IN Indianapolis 6201 La Pas Trail 317-293-8055	SC	Greenville 400 S Pleasantburg 803-232-8217
MEMOREX CORP		KS Mission 5700 Broadmoor 913-362-1650	TX	Irving 1621 Walnut Hill 214-258-3510
18922 Forge Dr Cupertino, CA 95014 408-987-1000 Contact: Pam Valentine		KY Louisville 9112 Leesgate Rd 502-425-8395	TX	Houston 2021 Governors Circle 713-688-1451
■ Products & Services		LA New Orleans 1070 St Charles St 504-522-4401	VA	Richmond 6620 W Broad St 804-288-3116
Concentrators		MD Hunt Valley 11350 McCormick Rd 301-366-8800	WA	Seattle 631 Strander Blvd 206-575-3823
Front-end processors		MA Waltham 470 Totten Pond Rd 617-890-0700	WI	Milwaukee 10201 W Lincoln Ave 414-327-4040
Add-on main memory		MI Southfield 24681 Northwestern Hwy 24 313-354-4511	WI	Eau Claire 1414 Hamilton 715-834-7131
Cartridges				
Cartridge drives				
Disc drives, floppy				
Discs, floppy				
Disc drives, large				
Disc packs				
Tape, magnetic				
Tape drives, magnetic				
Intelligent (programmable) terminals				
Remote line printers				
Terminal controllers				

MFE CORP

Keewaydin Dr
Salem, NH 03079
603-893-1921
Contact: Jerome M Kaplan
■ Products & Services
Cassettes
Cassette drives
Disc drives, floppy
Floppy disc recorders
Tape, magnetic
Batch terminals
Word recognition units
Automatic answering units

Branch Sales Offices:

- | | | | | | |
|----|---|----|---|----|--|
| AL | Atlanta
Reynolds & Assoc
5057 Vernon Springs Dr
404-393-9113 | FL | Ft Lauderdale
Reynolds & Assoc Inc
161 SW 75 Ave
305-581-6611 | NM | Abuquerque
Mountaintek
6022 Constitution Av NE
505-265-8521 |
| AK | Anchorage
Harry J Lang & Assoc
1406 W 47 Av
908-279-5741 | FL | Satellite Beach
Reynolds & Assoc Inc
476 N A1A 1
305-773-4700 | NM | Albuquerque
Qualtech Inc
310 Louisiana NE
505-255-6100 |
| AZ | Tempe
Qualtech Inc
610 W Broadway
602-967-4655 | FL | St Petersburg
Reynolds & Assoc Inc
11405 8 St E
813-360-1484 | NY | Buffalo
H C Johnson Agencies
5900 Main St
716-632-7880 |
| AR | Dallas
The Thorson Co
4445 Alpha Rd
214-233-5744 | GA | Atlanta
FM Associates
Box 9901
404-634-7830 | NY | Albany
H C Johnson Agencies
105 Wolf Rd
518-459-1239 |
| CA | Los Angeles
The Thorson Co
520 So Sepulveda Blvd
213-476-1241 | GA | Atlanta
Reynolds & Assoc Inc
5057 Vernon Springs Dr
404-393-9113 | NY | Fayetteville
H C Johnson Agencies
Box 215
315-637-9383 |
| CA | Mountain View
The Thorson Co
625 Ellis St
415-964-9300 | HI | Honolulu
Aloha Associates
1919 Hunnewell St
808-942-1574 | NY | Rochester
H C Johnson Agencies
875-Atlantic Av
716-482-3000 |
| CA | Irvine
The Thorson Co
17775 Main St
714-557-4460 | HI | Honolulu
Aloha Assoc
Century Commercial Ctr;1750
Kalakaua Ave
808-941-1574 | NY | Buffalo
H C Johnson Agencies Inc
5900 Main St
716-632-7880 |
| CA | Goleta
The Thorson Co
340 So Kellogg Av
805-964-8751 | IL | Chicago
Carter Electronics
4919 W 63 St
312-585-5485 | NC | Ramseur
FM Associates
Box 156
919-824-8461 |
| CA | San Diego
The Thorson Co
7841 Balboa Av
714-292-8525 | IL | Elmhurst
Sector Engineering Sales Inc
770 N Church Rd
312-530-7850 | NC | Winston Salem
Reynolds & Assoc Inc
614 First Union Bldg
919-725-6196 |
| CO | Evergreen
Westek Data Products Inc
25921 Fern Gulch
303-674-5255 | IN | Indianapolis
Carter Electronics
6333 Hollister Dr
317-293-0696 | OH | Fairview Park
Carter McCormic & Peirce Inc
22650 Lorain Rd
216-779-5100 |
| CO | Boulder
Westek Data Products Inc
1322 Arapahoe Rd
303-449-2620 | IN | Indianapolis
Sector Engineering Sales Inc
10713 Wildwood Dr
317-842-1120 | OH | Dayton
Carter McCormic & Peirce Inc
4977 Northcut Pl
513-222-7700 |
| CT | Natick
Andruss-Peskin Corp
Box 268
617-653-3919 | KS | Overland Park
Ramsey Assoc
6900 W 80 St
913-649-6996 | OR | Portland
The Thorson Co
7000 SW Hampton St
503-620-5800 |
| DE | Hatboro
QED Electronics
300 N York Rd
215-674-9600 | MD | Annapolis
Bartek Associates
613 E Bayview
301-261-2987 | PA | Hatboro
QED Electronics
300 N York Rd
215-674-9600 |
| FL | Jupiter
FM Associates
Box 996
305-746-2996 | MA | Natick
Andruss-Peskin Corp
Box 268
617-653-3919 | PA | Monroeville
Carter McCormic & Peirce
409 Beatty Rd
412-372-4415 |
| FL | Orlando
FM Associates
Box 13705
305-851-5710 | MI | Farmington Hills
Carter McCormic & Peirce Inc
23995 Freeway Pk Dr
313-477-7700 | TX | Dallas
The Thorson Co
4445 Alpha Rd
214-233-5744 |
| | | MN | Minneapolis
Carter Electronics
2415 Annapolis La
612-559-1976 | TX | Houston
The Thorson Co
6633 Hillcroft
713-771-3504 |
| | | MN | Hamel
Spector Engineering Sales Inc
6200 Rolling Hills Rd
612-478-6675 | TX | Austin
The Thorson Co SW
300 E Huntland Dr
512-451-7527 |
| | | MO | St Louis
Carter Electronics
1901 Congressional Dr
314-596-1406 | UT | Salt Lake City
Mountaintek
3788 Brockbank Dr
801-278-6920 |
| | | MO | St Louis
Ramsey Assoc
1901 Congressional Dr
314-569-1406 | UT | Salt Lake City
Westek Data Products Inc
3788 Brockbank Dr
801-278-6920 |
| | | NJ | Englishtown
Triple E
32 Bunker Hill Dr
201-446-4222 | WA | Bellevue
The Thorson Co
One Lake Bellevue Dr
206-455-9180 |

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

WI Milwaukee
Carter Electronics
3958 N 51 Blvd
414-464-5555

WI Milwaukee
Sector Engineering Sales Inc
8705 Port Washington Rd
414-352-8282

ONTARIO, CANADA
Ottawa ON
Allcom Data Ltd
1980 Merivale Rd
613-226-2340

ONTARIO, CANADA
Etobicoke ON
RFQ Ltd
385 The West Mall
416-626-1445

ONTARIO, CANADA
Ottawa ON
Louis Albert Assoc
2264 Stevenage Dr
613-727-5941

ONTARIO, CANADA
Mississauga ON
Louis Albert Assoc
6205 Airport Rd
416-677-5888

QUEBEC, CANADA
Quebec
RFQ Ltd
Dollard Des Ormeaux
514-694-5724

SWITZERLAND
Vevey
MFE Products SA
Av du General Guisan 58
021-52-80-40

MICOM SYSTEMS INC
9551 Irondale Ave
Chatsworth, CA 91311
213-882-6890
Advertising pages 32,33
Contact: Roger L Evans
■ Products & Services
Concentrators
Inverse multiplexers
Multiplexers, time division
Multiplexers, intelligent
Multiplexers, group band
Port selectors
Port sharing units
Line drivers
Modems, limited distance
RTS emulator
Error Controllers
Modem eliminators
Protocol converters
Data com. softw, comms processor vend.

Branch Sales Offices:

AK Anchorage
Transalaska Data Systems
Bldg 4 Huffman Business Pk
907-349-4528

AZ Scottsdale
BFA Corp
4426 Saddlebag Tr
602-994-5400

CA Anaheim
Moxon Electronics
1440 S State College Blvd
714-635-7600

CO Denver
BFA Corp
12015 E 46 Ave
303-371-2422

FL Orlando
Col-Ins Co Inc
Box 13189
305-423-7615

HI Honolulu
Gray Assoc
691 Kalanipuu
808-395-8669

IL Rolling Meadows
SEA Inc
1225 Carnegie St
312-255-4820

IN Carmel
SEA Inc
624B So Range Line Rd
317-846-2591

MD Edgewater
Commart Inc
3910 W Shore Dr
301-261-4344

MA Wellesley
Datamart Inc
180 Linden St
617-235-5520

MI Madison Heights
WKM Assoc
345 Girard St
313-588-2300

MN Minneapolis
SEA Inc
7601 N Kentucky Ave
612-425-4455

MO Grandview
Digital System Sales Inc
4006 137 Terrace
816-765-3337

NJ Cherry Hill
Megargel/Himmelstein Assoc
2428 Rt 38
609-779-0200

NM Albuquerque
BFA Corp
3705 Westerfield Rd NE
505-292-1212

NY New York
Glasgal Comm
521 5 Ave
212-687-2455

OH Cleveland
WKM Assoc
16141 Puritas Ave
216-267-0445

OR Portland
Rush S Drake Assoc
222 SW Harrison St
503-224-3145

PA Pittsburgh
WKM Assoc
90 Clairton Blvd
412-892-2953

UT Salt Lake City
BFA Corp
395 Lawndale Dr
801-466-6522

WA Seattle
Rush S Drake Assoc
6133 6 Ave S
206-763-2755

WI Waukesha
SEA Inc
2423 Pebblevalley Rd
414-547-6637

ONTARIO, CANADA
Scarborough
R-O-R Assoc Ltd
21 Rolark Dr
416-291-7121

BELGIUM
Brussels
Telindus SA
Avenue De La Couronne 357
02-648-4470

DENMARK
Koge
Trend Electronics
Tangmosevej 99
03-65-23-45

ENGLAND
Milton Keynes
Scicon Data Systems
Kiln Farm
0908-565656

FINLAND
Helsinki
Heath and Co
Porthaninkatu 9B
716707

GERMANY, WEST
Frankfurt
Telemation GmbH
Feldbergstrasse 25
0611-723418

JAPAN
Tokyo
ITS-Japan Company Ltd
Chiyoda-Ku
03-262-2355

NETHERLANDS
The Hague
Koning en Hartman
Elektrotechniek
30 Koperwerf
70-678380

SOUTH AFRICA
Randburg
Grinel Data Systems
Box 50994
01-789-1441

SPAIN
Madrid
Specific Dynamics Iberia
Torrelaguna 61-1
403-0362

SWEDEN
Sundbyberg
Heath & Co
Lotsjovagen 17-19
08-289480

SWITZERLAND
Geneva
Interep SA
4, Cours Des Bastions
022-208346

MICON INDUSTRIES
252 Oak St
Oakland, CA 94607
415-763-6033
Contact: William Northfield
■ Products & Services
Data entry terminals, portable
Teleprinters, non-impact
Teletypewriters

MICRO APPLICATIONS SYSTEMS INC
5575 N Co Rd
Minneapolis, MN 55442
612-559-0320
Contact: R A Peterson
■ Products & Services
Batch terminals
Data entry terminals, portable
Intelligent (programmable) terminals
Remote job entry terminals

Branch Sales Offices:

CA Los Altos Hills
Bergis Associates
14431 Miranda Ct
415-941-4133

CA San Diego
Hadden Associates
4710 Ruffner
714-565-9444

IN Indianapolis
Scientific Sales
2555 E 55 Pl
317-253-4606

IA Chicago
Scientific Sales
7257 W Touhy Ave
312-775-7594

MD Gathersburg
Wright Company
19104 Rhodes Way
301-823-7370

MI Milford
Milford Scientific
Box 264
313-685-7781

MN Bloomington
Scientific Sales
9001 Bloomington Frwy
612-881-3300

MN Edina
Synectics Information Systems
Inc
7128 Valley View Rd
612-941-1241

NC Greensboro
Small System Services Inc
902 Spring Garden St
919-272-4867

OH Dayton
E V Swenson
5250 Far Hills Ave
513-435-2772

TX Houston
Systems Technology Assoc
Box 90057
713-440-8340

MICRO COMMUNICATIONS CORP

80 Bacon St
Waltham, MA 02154
617-899-8111
Contact: Maurice W Kirby
■ Products & Services
Cartridges
Cartridge drives
Cassettes
Cassette drives
Tape, magnetic
Tape drives, magnetic

Branch Sales Offices:

CA Torrance
Edwards Assoc
2808 Oregon Court K
213-328-9770

CA Sunnyvale
Criterion
1140 W Evelyn Ave
408-738-4666

CO Golden
J F Hurlburt Co
622 Gardenia Ct
303-279-7796

FL Satellite Beach
Reynolds & Assoc
476 N A1A
305-773-4700

IL Rolling Meadows
Sieger & Assoc
1855 Hicks Rd
312-991-6162

MA Newton Center
Daner-Hayes
684 Comm Ave
617-969-4650

MN Minneapolis
Stan Clothier Co
7423 Washington Ave S
612-944-3456

MO St Louis
Engineering Services
8429 Delmar Blvd
314-997-1515

OH Dayton
E V Swenson
5250 Fair Hills Ave
513-435-2772

TX Dallas
Airep Electronics
10155 Plano Rd
214-349-4360

VA Arlington
H J Hefferman Co
1123 N Irving St
703-552-6666

WA Seattle
Jon B Jolly
5416 California Ave SW
206-938-4166

BRITISH COLUMBIA, CANADA
Port Moody BC
Ocean Components Ltd
2609 Murray St
403-265-4677

QUEBEC, CANADA
Montreal
Perry Elect Sales
195 Graveline St
514-735-2471

AUSTRALIA
2560
Romtech Proprietary Ltd
B446 Campbelltown NSW
02-6014511

ENGLAND
Richmond Surrey
Russet Instruments Ltd
RIL House Sheen Park
01-940-9981

GERMANY, WEST
D-8000 Munchen 60
Ing Wernek Schwind
Landsberger Strabe 439
089-88-8202

INDIA
Bombay 400-021
Computer Maintenance Services
104 Embassy Ctr; Norman Point
214807

JAPAN
Tokyo
Marubun Corp
1-1 Nigon bashi Odenmachi
2-Chome, Chuo-Ku

NETHERLANDS
4803 AS Breda
Iamatra Benelex
B721
076-133457

Want to receive announcements of new products?
Turn to **UpDate Service Card, page 201.**

MICROCOMPUTER SYSTEMS CORP

432 Lakeside Drive
Sunnyvale, CA 94086
408-733-4200
Contact: Attn: VP Mktg
■ Products & Services
Cartridge drives
Disc drives, large
Tape drives, magnetic
Branch Sales Offices:
MA Waltham
Computer Mktg Inc
257 Crescent
617-894-7000

MA Boston
MSC Boston
50 Saniford St
617-742-7011

MICRO PERIPHERALS INC

21201 Oxnard St
Woodland Hills, CA 91367
213-999-2870
Contact: Jeff Segers
■ Products & Services
Disc drives, floppy

Branch Sales Offices:

FRANCE

Asurieres
Metrologie
La Tour d' Asurieres; 4 Avenue
Laurent Cely
791444

GERMANY, WEST

Munich
Datamega
Hermann Oberth Strasse 7,
Putzbrunn
089-460-4993

JAPAN

Yokohama
ALPS Electric Co Ltd
1767 Nippa-Cho Kohoku-Ku

MICROPOLIS CORP

7959 Deering Ave
Canoga Park, CA 91304
213-703-1121
Contact: Robert D Chisum
■ Products & Services
Disc drives, floppy

Branch Sales Offices:

AL Huntsville
Pen-Tech Assoc
3322 Memorial Pkwy SW
205-881-9298

AK Redmond
Quadra Sales Corp
14825 NE 40 St
206-883-3550

CA Sunnyvale
Group III Electronics
542 Lakeside Dr
408-245-4392

CA Redondo Beach
Group III Electronics
2615 Manhattan Beach Blvd
213-973-7844

CA San Diego
Group III Electronics
8716 Production Ave
714-578-1120

CA Canoga Park
Micropolis Corp
7959 Deering Ave
213-703-1121

FL Maitland
Pen-Tech Assoc
Box 1475
305-645-3444

FL Deerfield Beach
Pen-Tech Assoc
201 SE 15 Ter
305-421-4989

GA Marietta
Pen-Tech Assoc
627 Cherokee St
404-424-1931

IL Chicago
Data Electronics
4976 N Milwaukee Ave
312-283-0300

- IN Indianapolis
Data Electronics
1150 N Shade Lane Ave
317-359-5368
- MD Rockville
Electronic Marketing Assoc
11716 Parklawn Dr
301-881-5300
- MA Newton
EMC
381 Elliot St
617-244-4740
- MI Farmington Hills
Carter-McCormic & Peirce Inc
23995 Freeway Park Dr
313-477-7700
- MN Plymouth
Data Electronics
3140 Harbor Ln
612-559-1434
- MO St Louis
Engineering Services Co
8420 Delmar Blvd
314-997-1515
- NY Great Neck
Harvey J Krasher Assoc
33 Great Neck Rd
516-487-0690
- NC High Point
Pen-Tech Assoc
1202 Eastchester Dr
919-883-9125
- OH Cleveland
Carter McCormic & Peirce Inc
22650 Lorain Rd
216-779-5100
- OH Dayton
Carter McCormic & Peirce Inc
4977 Northcutt Pl
513-222-7700
- PA Pittsburgh
Carter McCormic & Peirce Inc
409 Beatty Rd
412-372-4415
- PA King of Prussia
Electronic Marketing Assoc
210 Goddard Blvd
215-248-5050
- TX Dallas
US Data Assoc
14241 Proton Rd
214-661-9633
- TX Houston
US Data Assoc
4800 W 34 St
713-681-0200
- WA Redmond
Quadra Sales Corp
14825 NE 40 St
206-883-3550
- ONTARIO, CANADA
Ottawa
D G S Datagraphics
17 F Enterprise Ave
613-225-0411
- AUSTRALIA
Rozelle
Ampec Engineering Co Pty Ltd
1 Wellington St
02-818-1166
- ENGLAND
Reading
Sintrom Ellinor Ltd
14 Arkwright Rd
0734-85464
- FRANCE
Sevres
Tekelec-Airtronic
rue Carle Vernet
1 027-75-35
- GERMANY, WEST
Eching
Kontron Elektronik GmbH
Breslauer Str 2
08165/77-1
- ISRAEL
Haifa
Microcomputer Engineering Ltd
Box 7238
04 89670
- ITALY
Milan
Macronics SA
Viale Jenner 38/40
6882141-2-3
- JAPAN
Chuo-Ku
Shoshin Shoji Kaisha Ltd
Nihonbashi
270-5921
- NEW ZEALAND
Auckland
Processor Enterprises Ltd
160 Kitchener Rd
492-744
- SCOTLAND
Bridge of Earn
Data Systems Engineering
13 Dunbarney Ave
2780
- SOUTH AFRICA
Pinegowrie
Radiokom (1969) Pty Ltd
Box 56412
789-400
- SWITZERLAND
Zurich
MST Micro-System-Technik AG
Badenerstrasse 296
01-242-1077
- MICRO SWITCH DIV
HONEYWELL INC
11 West Spring St
Freeport, IL 60132
815-235-6600
Contact: Thomas S Ingala
■ Products & Services
Switches, data communications, automatic
Switches, data communications, manual
- Branch Sales Offices:
- CA Orange
Micro Switch; A Div of Honeywell
505 S Main St
714-558-7400
- CA San Jose
Micro Switch; A Div of Honeywell
2025 Gateway Pl
408-998-3131
- CO Englewood
Micro Switch; A Div of Honeywell
5115 S Valley Hwy
303-779-6439
- CT Hartford
Micro Switch; A Div of Honeywell
90 Brainard Rd
203-549-3800
- GA Atlanta
Micro Switch; A Div of Honeywell
6 W Druid Hills Dr NE
404-321-2565
- IL Park Ridge
Micro Switch; A Div of Honeywell
1460 Renaissance Dr
312-296-0710
- IA Davenport
Micro Switch; A Div of Honeywell
3435 Spring St
319-359-3441
- MA Newton
Micro Switch; A Div of Honeywell
70 Wells Ave
617-969-0265
- MI Southfield
Micro Switch; A Div of Honeywell
17515 W Nine Mile Rd
313-424-3569
- MN Minneapolis
Micro Switch; A Div of Honeywell
7400 Metro Blvd
612-830-3516
- MO St Louis
Micro Switch; A Div of Honeywell
2055 Craigshire Dr
314-878-2400
- NJ Westfield
Micro Switch; A Div of Honeywell
574 Springfield Ave
201-233-9200
- NY Elmsford
Micro Switch; A Div of Honeywell
570 Taxter Rd
914-592-3200
- NY Rochester
Micro Switch; A Div of Honeywell
100 Metro Park
716-424-2700
- NC Charlotte
Micro Switch; A Div of Honeywell
517 S Sharon Amity Rd
704-364-4770
- OH Cleveland
Micro Switch; A Div of Honeywell
1001 E 55 St
216-361-7280
- OH Dayton
Micro Switch; A Div of Honeywell
4540 Honeywell Ct
513-237-4000
- PA Valley Forge
Micro Switch; A Div of Honeywell
Valley Forge Corp Ctr
215-666-8340
- TX Dallas
Micro Switch; A Div of Honeywell
1111 W Mockingbird
214-688-7533
- TX Houston
Micro Switch; A Div of Honeywell
8440 Westglen
713-780-6651
- WA Mercer Island
Micro Switch; A Div of Honeywell
9555 E 36 St
206-233-2010
- WI Milwaukee
Micro Switch; A Div of Honeywell
2979 N Mayfair Rd
414-771-6300

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

MINI COMPUTER SYSTEMS

2259 Via Burton
Anaheim, CA 92806
714-870-7660
Contact: Ron Carroll

MINICOMPUTER SYSTEMS

399 Fairview Park Dr
Elmsford, NY 10523
914-592-8812
Contact: Art Garifalo
■ Products & Services
Multiplexers, time division
Multiplexers, intelligent
Disc drives, large
Furniture, cabinets, terminal enclosures
Multiplexers, intelligent

DDP systems
Furniture, cabinets, terminal enclosures
Branch Sales Offices:

- CA Anaheim
Gemini Assoc
461 S Glassell
714-997-7745
- CA San Jose
Reptek
3031 Tisch Way
408-244-5508
- MA Lynnfield
Grady & Assoc
18 Cortland Ln
617-334-6633
- NY Wantagh
Bytec Representatives
3375 Park Ave
516-781-7400
- OH Cincinnati
Rapidline
8434 Vine St
513-761-8380
- WA Bellevue
Hood Eng
12835 Bellevue—Redmond Rd
206-453-9375

MITRON SYSTEMS CORP

2000 Century Plaza
Columbia, MD 21044
301-992-7700
Contact: Roger Marshall
■ Products & Services
Tape drives, magnetic
Batch terminals
Automatic calling units

MODULAR COMPUTER SYSTEMS

1650 W McNab Rd
Fort Lauderdale, FL 33309
305-974-1380
Contact: Alan Shulman
■ Products & Services
Minicomputers
Remote network processors
Line drivers
DDP systems
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Tape punch/reader, paper
Data entry terminals, portable
Teletypewriters
Video data terminals (KSR)
Computer/communications interfaces
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.

Branch Sales Offices:

- CA El Segundo
Modular Computer Sys
888 N Sepulveda Blvd
213-640-1302
- CA San Jose
Modular Computer Sys
3031 Tisch Way
408-247-4152
- CO Englewood
Modular Computer Sys
6401 S Yosemite
303-773-6101
- CT Farmington
Modular Computer Sys
790 Farmington Ave
203-677-4333
- FL Orlando
Modular Computer Sys
7040 Lake Ellenor Dr
305-855-7160
- GA Tucker
Modular Computer Sys
404-938-9965

- IL Elmhurst
Modular Computer Sys
118 Industrial Dr
312-833-5620
- MD Riverdale
Modular Computer Sys
5711 Sarvis Ave
301-779-5325
- MA Lexington
Modular Computer Sys
1050 Waltham St
617-862-2366
- MI Southfield
Modular Computer Sys
24901 Northwestern Hwy
313-353-3114
- NJ Clark
Modular Computer Sys
727 Raritan Rd
201-574-0660
- OH Cincinnati
Modular Computer Sys
11315 Reed Hartman Hwy
513-984-1440
- PA Pittsburgh
Modular Computer Sys
1700A Sainte Claire Plaza
412-941-3560
- TX Dallas
Modular Computer Sys
2874 LBJ Fwy
214-243-6088
- TX Houston
Modular Computer Sys
7401 Gulf Fwy
713-641-6302

MODULAR FURNITURE CONCEPTS INC

23960 Madison St
Torrance, CA 90505
213-373-8630
Contact: Attn: VP Mktg
■ Products & Services
Furniture, cabinets, terminal enclosures

MOHAWK DATA SCIENCES CORP

1599 Littleton Rd
Parsippany, NJ 07054
201-540-9080
Advertising page 104
Contact: Jack Grasso
■ Products & Services
DDP systems
Cartridge drives
Batch terminals
Intelligent (programmable) terminals
Interactive systems
Remote job entry terminals
Word processors, communicating
Ribbons and supplies for terminals and printers
Maintenance organizations

Branch Sales Offices:

- AL Birmingham
Mohawk Data Sciences Corp
90 Bagby St
205-945-1847
- CA Santa Monica
Mohawk Data Sciences Corp
3228 Nebraska Ave
213-829-9778
- CA Palo Alto
Mohawk Data Sciences Corp
2464 Embarcadero Way
415-326-1577
- CO Denver
Mohawk Data Sciences Corp
2755 S Locust St
303-758-6433

- CT Wethersfield
Mohawk Data Sciences Corp
30 Jordan La
203-529-8665
- CT Stamford
Mohawk Data Sciences Corp
1200 Summer St
203-356-1710
- DC Arlington
Mohawk Data Sciences Corp
1925 N Lynn St
703-522-1400
- FL Miami
Mohawk Data Sciences Corp
8400 NW 52nd St
305-592-8410
- FL Jacksonville
Mohawk Data Sciences Corp
101 Century 21 Dr
904-721-3421
- FL Tampa
Mohawk Data Sciences Corp
205 Mariner Sq
813-877-5771
- GA Atlanta
Mohawk Data Sciences Corp
1945 The Exchange
404-952-2391
- IL Oak Brook
Mohawk Data Sciences
2803 Butterfield Rd
312-654-8630
- IN Indianapolis
Mohawk Data Sciences Corp
2441 Production Dr
317-243-7547
- IA Des Moines
Mohawk Data Sciences Corp
617 E Second St
515-288-8918
- KS Shawnee Mission
Mohawk Data Sciences Corp
6405 Metcalfe Ave
913-262-5488
- KY Louisville
Mohawk Data Sciences Corp
Executive Park
502-897-3396
- LA Metairie
Mohawk Data Sciences Corp
4900 Veterans Mem Hwy
504-888-1711
- MD Baltimore
Mohawk Data Sciences Corp
6999 Riesterstown Rd
301-358-1038
- MA Waltham
Mohawk Data Sciences Corp
460 Totten Pond Rd
617-890-4430
- MI Southfield
Mohawk Data Sciences Corp
3000 Town Center
313-352-9160
- MI Grand Rapids
Mohawk Data Sciences Corp
6115 28 St
616-942-9173
- MI Lansing
Mohawk Data Sciences Corp
304 S Waverly Rd
517-321-6091
- MN Bloomington
Mohawk Data Sciences Corp
7801 Metro Pkwy
612-854-1141
- MO St Louis
Mohawk Data Sciences Corp
12300 Olive St Rd
314-727-0175

NE Omaha
Mohawk Data Sciences Corp
7101 Mercy Rd
402-392-0690

NJ Springfield
Mohawk Data Sciences Corp
11 Dundar Rd
201-467-9850

NY New York
Mohawk Data Sciences Corp
150 E 42nd St
212-697-7711

NY Schenectady
Mohawk Data Sciences Corp
2245 Central Ave
518-372-6411

NY Buffalo
Mohawk Data Sciences Corp
3960 Harlem Rd
716-839-5200

NY Rochester
Mohawk Data Sciences Corp
3255 Brighton
716-442-5720

NY Liverpool
Mohawk Data Sciences Corp
7481 Henry Clay Blvd
315-457-3248

NC Charlotte
Mohawk Data Sciences Corp
5601 Executive Center Dr
704-535-6450

NC Raleigh
Mohawk Data Sciences Corp
3810 Merton Dr
919-782-4184

OH Akron
Mohawk Data Sciences Corp
708 E Wilbeth Rd
216-762-7227

OH Cincinnati
Mohawk Data Sciences Corp
11315 Reed Hartman Hwy
513-984-5093

OH Independence
Mohawk Data Sciences Corp
5755 Granger Rd
216-398-4700

OH Worthington
Mohawk Data Sciences Corp
6797 No High St
614-888-6527

OH Toledo
Mohawk Data Sciences Corp
1846 N Reynolds Rd
419-531-8953

OR Tigard
Mohawk Data Sciences Corp
7150 SW Hampton
503-620-4404

PA Wayne
Mohawk Data Sciences Corp
999 Old Eagle School Rd
215-687-9420

PA Pittsburgh
Mohawk Data Sciences Corp
1910 Cochran Rd
412-561-4700

SC Greenville
Mohawk Data Sciences Corp
37 Villa Rd
803-242-9167

TN Nashville
Mohawk Data Sciences Corp
1100 Kermit Dr
615-361-7333

TN Memphis
Mohawk Data Sciences Corp
3035 Directors Row
901-346-2700

TX Houston
Mohawk Data Sciences Corp
4141 E Directors Row
713-681-6601

TX Austin
Mohawk Data Sciences Corp
314 W 11 St
512-349-3509

TX Dallas
Mohawk Data Sciences Corp
2619 Electronic La
214-358-5391

TX San Antonio
Mohawk Data Sciences Corp
8026 Vantage Dr
512-349-3509

UT Salt Lake City
Mohawk Data Sciences Corp
530 Lawndale Dr
801-466-8668

VA Richmond
Mohawk Data Sciences Corp
1900 Byrd Ave
804-285-3467

WA Bellevue
Mohawk Data Sciences Corp
1715 114 SE
206-455-5995

WI Wauwatosa
Mohawk Data Sciences Corp
9730 W Blue Mound Rd
414-258-5620

BELGIUM
Brussels
Mohawk Data Sciences Intl
Service Corp
Rue Decale 53
02513-4543

MONOLITHIC SYSTEMS CORP

14 Inverness Dr E
Englewood, CO 80112
308-770-7400

Contact: Lee Ahlquist
■ Products & Services
Add-on main memory

Branch Sales Offices:

CA Pasadena
Monolithic Systems Corp
1105 Daveric Dr
213-351-8717

CO Englewood
Monolithic Systems Corp
14 Inverness Dr E
303-770-7400

NJ Princeton
Monolithic Systems Corp
1101-B9 State Rd
609-921-2240

MOTOROLA GOV'T ELECTRONICS DIV

Box 1417
Scottsdale, AZ 85252
602-949-3249

Contact: R C Worth
■ Products & Services
Data security devices, encoder/decoders
Data security devices, personal ident. sys.
Data communications consultants

MOTOROLA SEMICONDUCTOR PROD

PO Box 20912
Phoenix, AZ 85036
602-244-6900

Contact: Bob Novascone
■ Products & Services
Add-on main memory
Intelligent (programmable) terminals
Voice digitizers

Branch Sales Offices:

AL Huntsville
Motorola Semiconductor Prod
2611 Artie St
205-533-1650

AZ Phoenix
Motorola Semiconductor Prod
6991 E Camelback Rd
602-994-6326

CA Encino
Motorola Semiconductor Prod
15355 Morrison St
213-986-6850

CA Orange
Motorola Semiconductor Prod
One City Blvd W
714-634-2844

CA San Diego
Motorola Semiconductor Prod
7071 Convoy Ct
714-560-4644

CA San Jose
Motorola Semiconductor Prod
4000 Moorpark Ave
408-985-0510

CO Denver
Motorola Semiconductor Prod
3515 S Tamarac
303-773-6800

CT New Haven
Motorola Semiconductor Prod
3074 Whitney Ave
203-281-0771

FL Ft Lauderdale
Motorola Semiconductor Prod
1001 NW 62 St
305-491-8141

FL Casselberry
Motorola Semiconductor Prod
221 Live Oaks Blvd
305-831-3422

FL St Petersburg
Motorola Semiconductor Prod
9455 Koger Blvd
813-576-6030

GA Atlanta
Motorola Semiconductor Prod
6085 Barfield Rd
404-256-0222

IL Chicago
Motorola Semiconductor Prod
2010 Algonquin Rd
312-576-7808

IN Fort Wayne
Motorola Semiconductor Prod
2100 Goshen Rd
219-484-0436

IN Indianapolis
Motorola Semiconductor Prod
6525 E 82 St
317-849-7060

IA Cedar Rapids
Motorola Semiconductor Prod
206 Collins Rd NE
319-377-9439

KS Kansas City
Motorola Semiconductor Prod
6700 W Squibb Rd
913-384-3050

MD Hyattsville
Motorola Semiconductor Prod
8200 Professional Pl
301-577-2600

MA Boston
Motorola Semiconductor Prod
2 Militia Dr
617-861-1350

MI Douglas
Motorola Semiconductor Prod
200 Washington Rd
616-857-2159

- MI Westland
Motorola Semiconductor Prod
8623 N Wayne Rd
313-261-6200
- MN Minnesota
Motorola Semiconductor Prod
6950 Wayzata Blvd
612-545-0251
- MO St Louis
Motorola Semiconductor Prod
760 Office Pkwy
314-872-7681
- NJ River Edge
Motorola Semiconductor Prod
337 Johnson Ave
201-488-1200
- NY Fishkill
Motorola Semiconductor Prod
Route 9
914-896-8970
- NY Hauppauge
Motorola Semiconductor Prod
300 Vanderbilt Motor Pkwy
516-231-9000
- NY Rochester
Motorola Semiconductor Prod
1163 Pittsford-Victor Rd
716-248-5494
- NY Syracuse
Motorola Semiconductor Prod
E Molloy Rd
315-454-9373
- NC Raleigh
Motorola Semiconductor Prod
3716 National Dr
919-782-7604
- OH Cleveland
Motorola Semiconductor Prod
840 Brainard Rd
216-461-3160
- OH Dayton
Motorola Semiconductor Prod
3490 South Dixie Dr
513-294-2231
- OH Worthington
Motorola Semiconductor Prod
933 High St
614-846-9460
- OK Tulsa
Motorola Semiconductor Prod
4833 S Sheridan
918-664-5227
- OR Portland
Motorola Semiconductor Prod
9370 SW Greenburg Rd
503-244-7593
- PA Ft Washington
Motorola Semiconductor Prod
501 Office Center
215-643-4500
- TN Knoxville
Motorola Semiconductor Prod
9041 Executive Park Dr
615-690-5592
- TX Austin
Motorola Semiconductor Prod
7715 Chevy Chase 4
512-452-7673
- TX Dallas
Motorola Semiconductor Prod
4825 LBJ Frwy
214-661-9829
- TX Ft Worth
Motorola Semiconductor Prod
5555 N Beach St
817-232-1980
- TX Houston
Motorola Semiconductor Prod
2190 North Loop W
713-688-4583
- VA Charlottesville
Motorola Semiconductor Prod
400 Preston Ave
804-977-3691
- WA Kirkland
Motorola Semiconductor Prod
10604 NE 38 Pl
206-827-4681
- WI Wauwatosa
Motorola Semiconductor Prod
909 N Mayfair Rd
414-476-5554
- BRITISH COLUMBIA, CANADA
North Vancouver
Motorola Semiconductor Products
Canada
706 E 7th St
604-985-4618
- ONTARIO, CANADA
Downsview
Motorola Semi Products Canada
490 Norfinch Dr
416-661-6400
- ONTARIO, CANADA
Ottawa
Motorola Semi Products, Canada
1007 Merivale Rd
613-729-4361
- QUEBEC, CANADA
Montreal
Motorola Semi Products, Canada
7800 Cote de Liesse Rd
514-731-6881
- ARGENTINA
Buenos Aires
Motorola International Inc
Uruguay 485
46-9797
- AUSTRALIA
Sydney
Motorola Australia Pty Ltd
37-43 Alexander St
438-1955
- BRAZIL
Sao Paulo
Motorola Semi do Brazil Ltd
Rau Onze de Junio 1005
707286
- DENMARK
Lyngby
Motorola
Bredebovej 23
01-88-44-55
- ENGLAND
Middlesex, Wembley
Motorola Semi Ltd
Empire Way
01-902-8836
- FRANCE
Paris
Motorola Semi SA
15-17 Avenue de Segur
551-50-61
- GERMANY, WEST
Unterfoehring
Motorola GmbH Geschäftsbereich
Halbleiter
Muenchner Strasse 18
089-95-1041
- GERMANY, WEST
Nurnberg
Motorola GmbH Geschäftsbereich
Halbleiter
Virnsberger Strasse 43
0911-65761
- GERMANY, WEST
Sindelfingen
Motorola GmbH Geschäftsbereich
Halbleiter
Stralsunder Strasse 1
07031-83074
- GERMANY, WEST
Wiesbaden
Motorola GmbH Geschäftsbereich
Halbleiter
A Lincoln Strasse 28
06121-76-1921
- GERMANY, WEST
Hanover
Motorola GmbH Geschäftsbereich
Halbleiter
Hans-Boeckler-Strasse 30
0511-77-20-37
- HONG KONG
Kowloon
Motorola Semiconductors Hong
Kong Ltd
Eldex Industrial Bldg
3-630373-4
- ISRAEL
Tel Aviv
Motorola Israel Ltd
16 Kremenetski St
03-38973
- ITALY
Milan
Motorola Semiconduttori SpA
Via Ciro Menotti 11
738-6141
- ITALY
Rome
Motorola Semiconduttori SpA
Via Constantino Maes 68
83-14-7-46
- ITALY
Bologna
Motorola Semiconduttori SpA
Via Portanova
266905
- JAPAN
Osaka
Motorola Semiconductors Ltd
Nishinakajima, Yodogawa-Ku
06-305-1241
- JAPAN
Tokyo
Motorola Semi Japan Ltd
12-18 Jingyu-Mae; 6-Chome
Shibuya-Ku
03-499-1241
- MEXICO
Mexico, DF
Productos Semi Motorola de
Mexico SA
Tecoyotitla 191-A Col Florida
905-524-8191
- NETHERLANDS
Utrecht
Motorola NV
Emmalaan, 41
030-510207
- SWEDEN
Solna
Motorola Semiconductor AB
Virebergsaven 19
08-82-02-95

For further catalog information, turn to **UpDate Service Card, page 201.**

MPI
2099 West 2200 South
Salt Lake City, UT 84119
801-973-6053
Contact: Ernie Campbell
■ Products & Services
Teleprinters, impact

Branch Sales Offices:

- CA Los Angeles
Delta Mutual Sales
5318 McConnell Ave
213-391-0451
- CO Denver
PLS Assoc
7755 E Quincy Ave
303-773-1218
- FL Orlando
Gra Mar
3165 McCrory Pl
305-894-3351
- IL Des Plaines
Coombs Assoc
1001 E Touhy Ave
312-298-4830
- MD Silver Spring
Marktron
13975 Connecticut Ave
301-460-6100
- MA Lynnfield
Grady & Assoc
18 Cortland La
617-334-6633
- MN Minneapolis
Bohlig & Assoc
3440 Belt Line Blvd
612-922-7011
- NJ Fort Lee
Hansen & Hughes
2175 LeMoine Ave
201-652-7055
- OH Centerville
EMA
35 Compark Rd
513-433-2800
- TX Dallas
Mycrosystems Marketing
13777 N Central Expwy
214-238-7157

MSI DATA CORP

- 340 Fisher Ave
Costa Mesa, CA 92626
714-549-6000
Contact: Robert Mobilia
- Products & Services
Minicomputers
Acoustic couplers
Bar code readers
Batch terminals
Data entry terminals, portable
Computer/communications interfaces
Data access arrangement devices
Power supplies, uninterruptible; line correctors, etc.
Protocol converters
Data com. softw, intel. term. vendors
Maintenance organizations

Branch Sales Offices:

- CA Walnut Creek
MSI Data Corp
1910 Olympic Blvd
415-944-0550
- GA Atlanta
MSI Data Corp
300 Wendell Ct
404-691-7207
- IL Rolling Meadows
MSI Data Corp
1931 Rohlwing Rd
312-392-8300
- MA Braintree
MSI Data Corp
222 Forbes Rd
617-848-6450
- TX Garland
MSI Data Corp
1916 Pendleton Dr
214-270-6721

MSP INC

- 21 Worthen Rd
Lexington, MA 02173
617-861-6130
Contact: David Dacosta
- Products & Services
Data security devices, softw. security mod.
Data com. softw, independ. softw houses

MTI SALES CORP

- 159 Northern Blvd
Great Neck, NY 11021
516-482-3500
Contact: Bert Rudofsky
- Products & Services
Minicomputers
Modem sharing units
Multiplexers, frequency division
Acoustic couplers
Modems, limited distance
Modems, multiport
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Cassettes
Cassette drives
Disc drives, floppy
Discs, floppy
Tape drives, magnetic
Data entry terminals, portable
Intelligent (programmable) terminals
Remote line printers
Remote job entry terminals
Teletypewriters
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

- OH Beachwood
MTI Systems
24000 Mercantile
216-464-6688
- PA Philadelphia
Rohr Assoc
7902 Louise Ln
215-836-2200

MUIRHEAD INC

- 1101 Bristol Rd
Mountainside, NJ 07072
201-233-6010
Contact: Elaine Dompieri
- Products & Services
Facsimile-service carriers
EIA cable testers
Facsimile terminals
Computer/communications interfaces
Switches, data communications, automatic
Switches, data communications, manual

Branch Sales Offices:

- CA Sunnyvale
Talus Corp
292 Commercial St
408-738-4422

ONTARIO, CANADA

- Rexdale
Muirhead Systems
50 Galaxy Rd
416-675-7450

ENGLAND

- Beckenham, Kent
Muirhead Ltd
01-650-4888

MULTI-TECH SYSTEMS INC

- 82 Second Ave SE
New Brighton, MN 55112
612-631-3550
Advertising pages 64,80
Contact: Thomas E Heimerman

■ Products & Services

- Acoustic couplers
Modems, voice-grade, low-speed
Data content monitors
Electrical-parameters test equipment
Data access arrangement devices

Branch Sales Offices:

- CA Woodland Hills
Dayton-Forester Assoc
6311-A Desoto St
213-992-8831
- CA Sunnyvale
Inter-Link Systems
580 Weddell Dr
408-744-1930
- CA Oakland
Consolidated Data Terminals
1750 Edgewater Dr
415-638-1222
- CO Englewood
Dapac Inc
5650 S Syracuse Cir
303-770-8473
- HI Honolulu
Gray Assoc
691 Kalanipuu St
808-395-8669
- IL Wheaton
NCE Terminals & Communications
915 W Liberty Dr
312-682-0001
- KS Shawnee Mission
Inland Assoc
7975 W 63 St
913-362-2366
- MD Gaithersburg
Computer Terminal Sales
615 So Frederick
301-840-9270
- MA Wakefield
IMF Sales Assoc
18 Lakeside Office Pk
617-245-8900
- MI Brighton
Dacoterm Inc
11365 Culver Rd
313-453-7250
- MN Brooklyn Park
Tele-Terminals Inc
7216 Boone Av N
612-535-5330
- MN Minneapolis
Loonam Assoc Inc
5420 Edina Indust Blvd
612-831-1616
- MO St Louis
Inland Assoc
13100 Manchester Rd
314-821-3742
- NJ Roselle
TSC Data Terminals
155 E 1st Av
201-245-6333
- NY Penfield
Western NY Computing
2129 Five Mile Line Rd
716-381-4120
- NC Charlotte
J L Highsmith & Co
3733 Monroe Rd
704-333-7743
- OR Portland
C & L Terminals
1215 SE Ivon
503-231-0333
- TX Houston
Wilson's Data Communications
8989 Westheimer
713-977-2778

TX Dallas
Massey Communications
10859 Shady Trail
214-358-3002

UT Salt Lake City
Terminal Specialties Inc
3999 S Main St
801-262-7100

VA Richmond
J L Highsmith & Co
2604 D Buford Rd
804-272-5888

WA Redmond
Consolidated Data Terminals
14960 NE 31 Cir
206-883-0100

ONTARIO, CANADA
Ottawa
Allcom Data Ltd
1980 Merivale Rd
613-226-2340

NATIONAL DATA CORP.
1 National Data Plaza
Atlanta, GA 30329
404-329-8500
Contact: Charles Proctor
■ Products & Services
Message switchers
Minicomputers
Remote network processors
DDP systems
Computer/communications interfaces
Data communications consultants
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.
Maintenance organizations
Timesharing/service bureaus

Branch Sales Offices:

CA San Francisco
National Data Corp
180 Howard St
415-981-4450

DC Washington
National Data Corp
918 16 St NW
202-233-6503

GA Atlanta
National Data Corp
One National Data Plaza
404-329-8500

IL Westchester
National Data Corp
9914 Derby Ln
312-343-9400

MA Boston
National Data Corp
140 Federal St
617-426-4703

NY New York
National Data Corp
1185 Ave of the Americas
212-730-7844

NY New York
Interactive Services Corp
19 W 44 St
212-869-9170

OR Portland
National Data Corp
200 Market Bldg
503-223-7687

PA Pittsburgh
National Data Corp
Jacob Engrg Bldg; 100 Fleet St
412-921-4400

SC Charleston
National Data Corp
205 King St
803-722-2257

ONTARIO, CANADA
Don Mills ON
National Data Corp
1480 Don Mills Rd
416-445-7151

NATIONAL ELECTRIC CABLE

2931 Higgins Rd
Elk Grove Village, IL 60007
503-620-9400
Contact: Mary Zimmerman
■ Products & Services
EIA cable testers
Cables, electrical prefabricated extender
Cables, optical fiber
Computer/communications interfaces
Data jacks and plugs

Branch Sales Offices:

CO Berthoud
National Electric Cable
Box V
303-667-0151

OR Portland
National Electric Cable
16566 SW 72 Ave
503-620-9400

TX Houston
National Electric Cable
1400 West Belt N
713-464-8555

NATIONAL SEMICONDUCTOR CORP

2900 Semiconductor Dr; M/S 16250
Santa Clara, CA 95051
408-737-5152
Contact: Chuck Signor
■ Products & Services
Inverse multiplexers
Message switchers
Minicomputers
Multiplexers, intelligent
Fiber optic systems
MIL 188C adapters
DDP systems
Add-on main memory

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

NCR CORP

Dayton, OH 45479
513-449-2000
Contact: R L Callaway
■ Products & Services
Concentrators
Front-end processors
Message switchers
Multiplexers, frequency division
Packet processors
Remote network processors
Acoustic couplers
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
DDP systems
Add-on main memory
Cartridges
Cartridge drives
Cassettes
Cassette drives
Disc drives, floppy
Disc drives, large
Tape, magnetic
Tape drives, magnetic
Tape, paper
Tape punch/reader, paper
Badge readers
Bar code readers
Batch terminals
Intelligent (programmable) terminals
Interactive systems
Remote line printers

Remote job entry terminals
Teleprinters, non-impact
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)
Automatic answering units
Automatic calling units
Data access arrangement devices
Data jacks and plugs
Modem eliminators
Data communications consultants
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.
Lease and resale organizations
Maintenance organizations
Timesharing/service bureaus

NEC INFORMATION SYSTEMS INC

5 Militia Dr
Lexington, MA 02173
617-862-3120
Contact: Paul R Jolicoeur
■ Products & Services
DDP systems
Disc drives, large
Intelligent (programmable) terminals
Interactive systems
Remote line printers
Teleprinters, impact
Teletypewriters

Branch Sales Offices:

AL Huntsville
W A Brown Instruments
Box 4560
205-883-8660

AL Mandeville
W A Brown Instruments
Box 786
504-626-9701

AK Anchorage
Scientific Business Systems
800 E Diamond Blvd
907-344-8352

AZ Phoenix
Terminal Rentals
2430 S 20 St
602-258-4466

CA Tustin
Electronic Mktg Specialists
2600 Walnut A
714-832-9920

CA Sunnyvale
Electronic Mktg Specialists
599 N Mathilda Ave
408-245-9291

CA Sherman Oaks
Electronic Mktg Specialists
13837 Ventura Blvd 6
213-990-4244

CA San Diego
Electronic Mktg Specialists
12797 Calma Ct
714-560-5133

CA Tustin
Terminal Rentals
1542 A Moulton Pkwy
714-832-2414

CO Englewood
Thorson Rocky Mountain
7076 S Alton Way
303-779-0666

FL Orlando
W A Brown Instruments
22 Weber Ave
305-425-5505

FL Ft Lauderdale
W A Brown Instruments
961 NW 53 St
305-776-4800

FL	Melbourne W A Brown Instruments Box 1406 305-723-0766	NJ	Ft Lee Technical Marketing Assoc 2460 Lemoine Ave 201-224-6911	TX	Richardson Data Applications 1300 E Arapho Rd 214-231-4846
FL	Tallahassee W A Brown Instruments 1325 E Tennessee St 904-878-6642	NM	Albuquerque Total Business Systems 4801 Indian School NE 505-265-3511	TX	Houston Data Applications 5401 Micheldale 713-686-8413
GA	Atlanta W A Brown Instruments 3070 Presidential Dr 404-455-1035	NY	White Plains Bartlett Assoc 470 Mamoroneck Ave 914-949-6476	TX	San Antonio Data Applications 4538 Center View 512-732-7176
HI	Honolulu Gray Assoc 691 Kalanipuu 808-395-8669	NY	Holcomb Bartlett Assoc Box 125 726-657-6309	UT	Salt Lake City Thorson Rocky Mountain 3691 W 1987 S 801-973-7969
ID	Boise Byte Shop of Northwest 418 N Orchard 208-345-3811	NY	E Syracuse Ossman Instruments 6666 Old Collamer Rd 315-437-6666	VA	Arlington Terminals Unltd 1008 N Randolph St 703-525-6307
ID	Boise Office America 2525 Ark St 208-336-2514	NY	Rochester Ossman Instruments 130 Allen's Creek Rd 716-473-5720	WA	Seattle Byte Shop of Northwest 2605 2 Ave 206-622-7196
IL	Arlington Heights Dytec/Central 121 S Wilke Rd 312-394-3380	NY	Vestal Ossman Instruments 1901 Vestal Pkwy E 607-785-9947	WA	Bellevue Byte Shop of Northwest 14701 NE 20 206-746-0651
IL	Rosemont Information Systems 9806 W Farragut 312-671-7780	OH	Dayton Lowry & Assoc 1524 Marsetta Dr 513-429-9040	WA	Lynwood Byte Shop of Northwest 20101 44 Ave W 206-775-7436
IN	Indianapolis Dytec/Central 25 Beachway Dr 317-247-1316	OH	Cleveland Lowry & Assoc 1440 Snow Rd 216-398-0506	ALBERTA, CANADA	Calgary Lanpar Ltd 17-6025 12 St SE
IN	Indianapolis Home Computer Center 2115 E 62 St 317-21-6800	OH	Columbus Lowry & Assoc 1050 Freeway Dr N 614-436-2051	ALBERTA, CANADA	Edmonton Lanpar Ltd 16410-117 Ave 403-453-5946
KS	Shawnee Mission Inland Assoc 7975 W 63 St 913-362-2366	OH	Dayton WKM Assoc 7913 S Suburban Rd 513-434-7500	BRITISH COLUMBIA, CANADA	Vancouver Lanpar Ltd 1095 Howe St 604-689-1516
KY	Lexington Lowry & Assoc 205 E Reynolds Rd 606-273-3772	OH	Cleveland WKM Assoc 16141 Puritas Ave 216-267-0445	MANITOBA, CANADA	Winnipeg Lanpar Ltd 1313 Border Pl 204-632-4349
MD	Bethesda Bartlett Assoc 4405 East-West Hwy 301-856-3061	OR	Portland Byte Shop of Northwest 2033 SW 4 Ave 503-223-3496	ONTARIO, CANADA	Markham Lanpar Ltd 85 Torbay Rd 416-495-9123
MA	Framingham Bartlett Assoc 150 Speen St 617-879-7530	OR	Beaverton Byte Shop of Northwest 3482 SW Cedar Hill Blvd 503-641-8581	ONTARIO, CANADA	Ottawa Lanpar Ltd 471 Elgin St 613-238-3966
MI	Brighton Lowry & Assoc 135 W N St 313-227-7067	PA	Wayne Bartlett Assoc Box 72 215-688-7325	ONTARIO, CANADA	Markham Lanpar Ltd 1001 Denison St 416-495-9661
MI	Grand Rapids Lowry & Assoc 3902 Costa NE 616-363-9839	PA	Pittsburgh Lowry & Assoc 7 Parkway Center 412-922-5110	ONTARIO, CANADA	Waterloo Lanpar Ltd 550 Parkside Dr 519-886-5970
MI	Madison Heights WKM Assoc 345 W Girard St 313-588-2300	PA	Pittsburgh WKM Assoc 90 Clairton Blvd 412-892-2953	QUEBEC, CANADA	Montreal Lanpar Ltd 300 Victoria Ave 514-482-4773
MN	St Paul Dytec/North 1821 University Ave 612-645-5816	SC	Columbia W A Brown Instruments 1201 St Andrews Rd 803-798-8070		
MO	St Louis Inland Assoc 13100 Manchester St 314-821-3742	SC	Durham W A Brown Instruments 1231/2 Orange St 919-682-2383		
NJ	Cherry Hill Datastore 2428 Rt 38 609-779-0200	TN	Oak Ridge W A Brown Instruments 733 Emory Valley Rd 615-482-5761		

NETWORK ANALYSIS CORP

130 Steamboat Rd
Great Neck, NY 11024
516-829-5900

Contact: Howard Frank
■ Products & Services
Data communications consultants

Branch Sales Offices:

NY Great Neck
Network Analysis Corp
130 Steamboat Rd
516-829-5900

VA Vienna
Network Analysis Corp
301 Mable Ave W
703-281-7440

ENGLAND

London
PACTEL
33 Greycoat St
01-828-6374

NETWORK SYSTEMS CORP

6820 Shingle Creek Pkwy
Brooklyn Center, MN 55430
612-566-5050

Contact: M L Moore
■ Products & Services
Computer/communications interfaces

Branch Sales Offices:

AL Huntsville
Network Systems Corp
500 Lowell Dr
205-539-7929

CA San Mateo
Network Systems Corp
1611 Borel Pl
415-572-0331

CA Santa Fe Springs
Network Systems Corp
12631 E Imperial Hwy
213-863-4856

IL Oak Brook
Network Systems Corp
2625 Butterfield Rd
312-323-6240

MA Braintree
Network Systems Corp
14 Wood Rd
617-843-6562

MI Southfield
Network Systems Corp
29551 Greenfield Av
313-569-1801

NJ Paramus
Network Systems Corp
15 Prospect St
201-368-8024

PA Blue Bell
Network Systems Corp
1777 Walton Rd
215-542-8039

TX Irving
Network Systems Corp
700 Airport Frwy W
214-438-6464

VA Vienna
Network Systems Corp
513 W Maple Ave
703-281-0455

AUSTRALIA

Milsons Point
Karnang Pty Ltd
61 Lavender St
920858

Contact: Gen Adv Mgr

■ Products & Services
Digital service units
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Interactive systems
Teletypewriters
Video data terminals (KSR)
Automatic calling units
Data communications consultants
Maintenance organizations

NICOLET ZETA CORP

PO Box 4003
Concord, CA 94524
415-671-0600

Contact: Beverly Aquino
■ Products & Services
Digital plotters
Graphic display terminals
Interactive systems

Branch Sales Offices:**ONTARIO, CANADA**

Mississauga
Nicolet Instruments Canada Ltd
1-1200 Aerowood Dr
416-625-8302

AUSTRALIA

St Leonards, NSW
Electronic Assoc Pty
48 Atchison Str
439-7522

ENGLAND

Warwick
Nicolet Instrument
48 Atchison Str
0926/44111

FRANCE

Sevres
Tekelec Airtronic
Rue Carle Vernet
1-027-75-35

GERMANY, WEST

Frankfurt
Nicolet Instrument GmbH
6050 Offenbach Main
0611/812075

INDIA

Bombay
Echbee Corp
38, Cawasji Patel St
253489

ISRAEL

Tel Aviv
Bitcom Agencies Ltd
Devorah Haneviah Str
03-481269

JAPAN

Osaka
Nicolet Japan Corp
8-7-6 Chome;Nishi-Nakajima
06-305-2150

NETHERLANDS

The Hague
Repko b.v.
Box 63439
070-46508

REPUBLIC OF CHINA

Taipei, Taiwan
Tai I Trading Co
50 Hsin Shen So. Road
3936111

SPAIN

Madrid
Eset sa
Columbia 62

SWEDEN

Farsta
Tel Inter AB
Forshagagatan 58
08/940490

SWITZERLAND

CH-8810 Horgen 1
Comptrex AG
Drusvergstrasse
01-725-04-10

NIXDORF COMPUTER CORP

168 Middlesex Turnpike
Burlington, MA 01803
617-273-0480

Contact: John Kells
■ Products & Services
DDP systems

Word processors, communicating
Data com. softw. distr. dp systems vend.

Branch Sales Offices:**AZ Birmingham**

Nixdorf Computer Corp
165 West Valley Ave
205-942-6416

CA

Los Angeles
Nixdorf Computer Corp
Century City N Bldg; 10100 Santa
Monica Blvd
213-879-2034

CA

Los Angeles
Nixdorf Computer Corp
4311 Wilshire Blvd
213-937-5700

CA

San Mateo
Nixdorf Computer Corp
1670 Amphlett Blvd
415-574-7334

CA

San Diego
Nixdorf Computer Corp
4710 Ruffner St
714-565-9604

CO

Denver
Nixdorf Computer Corp
2460 W 26 Ave
303-455-3282

CT

Wethersfield
Nixdorf Computer Corp
465 Silas Deane Hwy
203-563-9053

FL

Miami
Nixdorf Computer Corp
1405 NW 167 St
305-620-9022

FL

Altamonte Springs
Nixdorf Computer Corp
435 Whooping Loop
305-339-6100

FL

Tampa
Nixdorf Computer Corp
5420 Bay Center Dr
813-879-2305

FL

Jacksonville
Nixdorf Computer Corp
7825 Baymeadows Way
904-737-7344

GA

Atlanta
Nixdorf Computer Corp
1800 Century Blvd NE
404-325-8300

GA

Atlanta
Nixdorf Computer Corp
1790 Century Cir
404-325-2250

IL

Chicago
Nixdorf Computer Corp
20 N Wacker Dr
312-782-5681

For further catalog information, turn to
Update Service Card, page 201.

NEW ENGLAND TELEPHONE & TELEGRAPH CO

185 Franklin St
Boston, MA 02107

IL Chicago
Nixdorf Computer Corp
5725 E River Rd
312-693-7320

IL Chicago
Nixdorf Computer Corp
20 N Wacker Dr
312-782-5682

IL Springfield
Nixdorf Computer Corp
100 W Cook St
217-789-7709

IN Indianapolis
Nixdorf Computer Corp
2421 Production Dr
317-241-8661

MD Linthicum
Nixdorf Computer Corp
793 Elkridge Landing Rd
301-796-3780

MA Wellesley
Nixdorf Computer Corp
888 Worcester St
617-235-8710

MI Southfield
Nixdorf Computer Corp
23777 Southfield Rd
313-569-2525

MN Minneapolis
Nixdorf Computer Corp
Southdale Office Center; 6700
France Ave S-Suite 150
612-929-0341

MO Maryland Heights
Nixdorf Computer Corp
100 Progress Pkwy
314-878-0636

MO Kansas City
Nixdorf Computer Corp
3100 South Broadway; Penn Tower
Office Center
816-531-1931

NJ Bloomfield
Nixdorf Computer Corp
400 Broadacres Dr
201-338-1700

NY New York
Nixdorf Computer Corp
1 Penn Plaza
212-977-2660

NY New Hyde Park
Nixdorf Computer Corp
3003 New Hyde Park Rd
516-328-1700

NC Charlotte
Nixdorf Computer Corp
2 Woodlawn Green
704-525-5281

OH Cleveland
Nixdorf Computer Corp
5755 Granger Rd
216-398-9210

OH Columbus
Nixdorf Computer Corp
5300 E Main St
614-861-4280

OH Cincinnati
Nixdorf Computer Corp
4000 Executive Park Dr
513-563-8943

PA Ft Washington
Nixdorf Computer Corp
510 Pennsylvania Ave
215-542-9292

PA Pittsburgh
Nixdorf Computer Corp
Two Gateway Center
412-391-8686

TN Chattanooga
Nixdorf Computer Corp
6200 Building-East Gate Center
615-892-1302

TN Nashville
Nixdorf Computer Corp
2500 21st Ave
615-383-0610

TX Houston
Nixdorf Computer Corp
2425 Fountain View Dr
713-621-3560

TX Dallas
Nixdorf Computer Corp
1250 W Mockingbird La
214-630-3343

WI Brookfield
Nixdorf Computer Corp
250 Bishops Way
414-786-9250

WI Madison
Nixdorf Computer Corp
955 W Broadway
608-221-4264

ALBERTA, CANADA
Calgary
Elan Data Makers Ltd
606 4 St SW
403-232-1661

NEWFOUNDLAND, CANADA
St Johns
Beothuk Data Systems Ltd
Box 9310 Station B
709-753-3333

ONTARIO, CANADA
Willowdale
Nixdorf Canada Ltd
505 Consumers Rd
416-498-7200

QUEBEC, CANADA
Montreal
Informec Registered
1420 Sherbrook St W
514-288-6422

JAPAN
Tokyo
Marubeni Electronics
16-16 Toranomon 1 Chome;
Minato-Ku
03-490-1351

PHILIPPINES
Manila
Suma Computer Sue Corp
De la Rosa & Salcedo Sts
85-42-36

VENEZUELA
Caracas
Ingedigit CA
Edif EXA 702; Avlibertador
32 68 64

NORTHERN TELECOM INC
International Plaza
Nashville, TN 37217
615-361-3500
Contact: Ronald Casey

NORTHERN TELECOM INC
NORTHEAST ELECTRONICS DIV
Airport Rd
Concord, NH 03301
603-224-6511
Contact: Ralph E Quinn
■ Products & Services
Packet-switching carriers
Computerized branch exchange (CBX)
Data content monitors
EIA cable testers
Electrical-parameters test equipment
Error rate detectors
Protocol analyzers

Response-time monitors
RTS emulator
Network management centers
Tech control centers
Telecommunications monitor
Switches, data communications, automatic
Switches, data communications, manual
Electrical-parameters test equipment

Branch Sales Offices:

CA Mountain View
Northern Telecom
643 Escuela Av
415-964-4818

IL Aurora
Northern Telecom
18 N Anderson
603-224-6511

IN Carmel
Northern Telecom
4646 Royal Oak La
603-224-6511

IA Des Moines
Northern Telecom
1812 56 St
603-224-6511

NH Concord
Northern Telecom
Box 649
603-224-6511

NY Mallory
Northern Telecom
Box 7
603-224-6511

NC Carthage
Northern Telecom
Route 3, Wedgewood
603-224-6511

PA Newton
Northern Telecom
Box 542
603-224-6511

TN Blountville
Northern Telecom
Box 275A
603-224-6511

TX Mt Pleasant
Northern Telecom
Box 180
603-224-6511

ALBERTA, CANADA
Edmonton
NEDCO
403-425-1510

ENGLAND
Chepstow, Gwent
Northern Telecom
High Street
2912-5614

If you know the name of the product, you can find out who makes it in the **Products & Services Directory, page 5.**

NORTHERN TELECOM SYSTEMS CORP
6110 Blue Circle Dr
Minnetonka, MN 55343
612-941-6500
Contact: Brooke Moore
■ Products & Services
Value-added carriers
DDP systems
Cartridge drives
Cassette drives
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Batch terminals
Data entry terminals, portable
Intelligent (programmable) terminals
Interactive systems

Remote line printers
Remote job entry terminals
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

AZ Scottsdale
Northern Telecom Systems Corp
602-947-6630
AZ Phoenix
Northern Telecom Systems Corp
602-273-1426
CA Los Angeles
Northern Telecom Systems Corp
213-645-4300
CA Sacramento
Northern Telecom Systems Corp
916-920-3759
CA San Francisco
Northern Telecom Systems Corp
415-546-6000
CA Santa Clara
Northern Telecom Systems Corp
408-732-1530
CA Newport Beach
Northern Telecom Systems Corp
714-955-2850
CO Englewood
Northern Telecom Systems Corp
303-770-3990
CO Denver
Northern Telecom Systems Corp
303-790-3995
CT East Hartford
Northern Telecom Systems Corp
203-568-2050
FL Winter Park
Northern Telecom Systems Corp
305-645-0300
GA Atlanta
Northern Telecom Systems Corp
404-455-3895
IL Schiller Park
Northern Telecom Systems Corp
312-992-0850
IN Indianapolis
Northern Telecom Systems Corp
317-788-1577
IA Clive
Northern Telecom Systems Corp
515-276-4923
KS Overland Park
Northern Telecom Systems Corp
913-341-8200
KY Louisville
Northern Telecom Systems Corp
502-895-2557
MA Braintree
Northern Telecom Systems Corp
617-848-6100
MI Grand Rapids
Northern Telecom Systems Corp
616-942-7700
MI Southfield
Northern Telecom Systems Corp
313-358-5065
MN Edina
Northern Telecom Systems Corp
612-941-6500
MO Maryland Heights
Northern Telecom Systems Corp
314-878-4911
MO St Louis
Northern Telecom Systems Corp
314-878-4911
NJ Cherry Hill
Northern Telecom Systems Corp
609-665-5141
NJ Leonia
Northern Telecom Systems Corp
201-947-9680

NJ Woodbridge
Northern Telecom Systems Corp
201-634-7800
NY New York
Northern Telecom Systems Corp
212-867-6200
NC Charlotte
Northern Telecom Systems Corp
704-525-5500
OH Beachwood
Northern Telecom Systems Corp
216-831-8005
OH Columbus
Northern Telecom Systems Corp
614-846-2267
OH Dayton
Northern Telecom Systems Corp
513-294-8517
OH Cleveland
Northern Telecom Systems Corp
216-741-4840
OK Tulsa
Northern Telecom Systems Corp
918-665-3372
OR Portland
Northern Telecom Systems Corp
503-245-2426
PA Pittsburgh
Northern Telecom Systems Corp
412-921-9930
TN Nashville
Northern Telecom Systems Corp
615-383-7623
TX Dallas
Northern Telecom Systems Corp
214-386-9151
TX Houston
Northern Telecom Systems Corp
713-977-8833
VA McLean
Northern Telecom Systems Corp
703-790-5560
VA Richmond
Northern Telecom Systems Corp
804-288-7271
WA Bellevue
Northern Telecom Systems Corp
206-455-9200
WA Seattle
Northern Telecom Systems Corp
206-246-1960
WI Milwaukee
Northern Telecom Systems Corp
414-541-4114

BRITISH COLUMBIA, CANADA

Burnaby
Data 100 Corp
604-294-1771

ONTARIO, CANADA

Montreal
Data 100 Ltd
514-767-5894

ONTARIO, CANADA

Ontario
Data 100 Ltd
416-455-6550

AUSTRIA

Vienna
Data 100 GmbH
72-24-52

BELGIUM

Brussels
Northern Telecom Systems Corp
251-69-72

ENGLAND

Hemel Hempstead
Data 100 Corp
41141

FRANCE

Paris
Data 100 SA
630-21-44

GERMANY, WEST

Frankfurt
Data 100 GmbH
72-04-71

ITALY

Milan
Data 100 SPA
02-654-731

NETHERLANDS

Amsterdam
Data 100 BV
020-471621

SPAIN

Madrid
Data 100 SA
410-06-00

SWITZERLAND

Zurich
Data 100 AG
46-66-20

NORTHWEST MICROFILM INC

1600 67 Ave
Minneapolis, MN 55430
612-566-5950

Contact: Steve Twite
■ Products & Services

Microfilm equipment, systems and services

Branch Sales Offices:

MN Minneapolis
15 S 9 St
612-375-1444
MO Kansas City
Northwest Microfilm Inc
1660 Broadway
816-421-8240
MO St Louis
Northwest Microfilm Inc
100 N Broadway
314-621-5252
NE Omaha
Northwest Microfilm Inc
206 S 19 St
402-346-7818

NOTIFIER CO

3700 N 56 St
Lincoln, NE 68504
402-464-0211

■ Products & Services

Fire Detection/Protection Equipment

NOVA ELECTRIC MFG CO

263 Hillside Av
Nutley, NJ 07110
201-661-3434

Contact: Ken Niovitch

■ Products & Services

Power supplies, uninterruptible; line correctors, etc.

Branch Sales Offices:

CA Inglewood
Basic Systems
213-673-4300
IL Chicago
Ampol Svc & Eng
312-685-1350
MD Arlington
Compower
703-528-5393
MA Norwell
Bordewieck Eng Sales
617-659-4915
MI Farmington
Anderson Electronics
313-476-9161

NY Plainview
Eastern Metro Assoc
516-931-1414

NY Fayetteville
Martin P Andrews
315-637-5291

NC Charlotte
Jake Rudisill Assoc
704-377-6901

PA Pittsburgh
Wainwright Tech'l Sales
412-487-5055

TX Addison
Kemp Eng
~ 4-661-0400

TX Dallas
US Data
214-661-9633

BRITISH COLUMBIA, CANADA
Vancouver
Alpha Technologies Ltd
604-430-1476

QUEBEC, CANADA
Montreal
Electrodesign Ltd
514-363-5120

NOVATION INC
18664 Oxnard St
Tarzana, CA 91356
213-996-5060
Advertising page 61
Contact: B F Kessler
■ Products & Services
Acoustic couplers
Modems, voice-grade, low-speed
Automatic answering units
Automatic calling units

NUCLEAR ENGINEERING SERVICES
CO
107 San Zeno Way
Sunnyvale, CA 94086
408-737-2080
Contact: Hank Graslie
■ Products & Services
Value-added carriers
Acoustic couplers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Modems, wideband, group band
Modems, wideband, super-group band
Teletypewriters
Data communications consultants
Lease and resale organizations
Maintenance organizations

NUDDATA CORP
32 Fairview Av
Little Silver, NJ 07739
201-842-5757
Contact: L S Kurzejewski
■ Products & Services
Line drivers
Modems, limited distance
Modems, voice-grade, low-speed
Data content monitors
Protocol analyzers
Code converters
Computer/communications interfaces
Protocol converters

OKIDATA CORP
111 Gaither Dr
Mt Laurel, NJ 08054
609-235-2600
Contact: Joseph Ramasco
■ Products & Services
Disc drives, large

Remote line printers
Teleprinters, impact
Branch Sales Offices:

CA Santa Ana
Okidata Corp
3609 W Macartur
714-979-5490

CA Mt View
Eakins Assoc
2483 Old Middlefield Way
415-969-4533

CA Fountain Valley
MQI Computer Products
18381 Bandilier Cir
714-964-4722

CO Denver
PLS Assoc Inc
7755 E Quincy Ave
303-773-1218

FL Maitland
Pen-Tech Assoc Inc
box 1475
305-645-3444

IL North Brook
Marketech
312 Woodhead Dr
312-291-1220

MD Silver Springs
Source Assoc
10300 Naglee Rd
301-431-0587

MA Wakefield
Data Engr Services
40 Bellevue Rd
617-245-6666

MI Farmington Hills
CMP Inc
23995 Freeway Park Dr
313-477-7700

MN Bloomington
Digital Systems Inc
9001 E Bloomington Fwy
612-884-2422

MO Grandview
Digital System Sales Inc
4006 E 13 Tr
816-765-3337

NJ Millburn
Graydon Assoc
396 Millburn Ave
201-467-1400

NY Fayetteville
R D Sherman
Box 248
315-637-9861

NY Jericho
Electro Rep Inc
366 N Broadway
516-938-0540

OH Dayton
Okidata Corp
2801 Far Hills Ave
513-294-0687

PA Montgomeryville
Robec Inc
Rt 309
215-628-4960

TX Houston
Data Marketing Inc
3330 Bering Dr
712-780-2511

For further catalog information, turn to
UpDate Service Card, page 201.

OLIVETTI CORP OF AMERICA
500 Park Ave
New York, NY 10022
212-371-5500
Contact: Gil Wintering
■ Products & Services
DDP systems

Cartridges
Cartridge drives
Cassettes
Cassette drives
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Floppy disc recorders
Tape drives, magnetic
Tape punch/reader, paper
Badge readers
Batch terminals
Intelligent (programmable) terminals
Interactive systems
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teletypewriters
Video data terminals (KSR)
Word processors, communicating
Maintenance organizations

Branch Sales Offices:

AZ Phoenix
Olivetti Corp of Amer
2609 N 24 St
602-273-7156

CA Los Angeles
Olivetti Corp of Amer
1300 W 8 St
213-387-3161

CA Anaheim
Olivetti Corp of Amer
1100 N Gilbert
714-772-7160

CA S San Francisco
Olivetti Corp of Amer
321 Allerton Ave
415-873-6911

CO Aurora
Olivetti Corp of Amer
11050 E Bethany Dr
303-755-9803

CT Milford
Olivetti Corp of Amer
Research St
203-878-0641

FL Miami
Olivetti Corp of Amer
16505 NW 13 Ave
305-625-6451

FL Tampa
Olivetti Corp of Amer
5440 Mariner Dr
813-877-8204

GA Atlanta
Olivetti Corp of Amer
11 Dunwoody Park
404-394-7222

IL Chicago
Olivetti Corp of Amer
816 S Michigan Ave
312-939-3577

LA New Orleans
Olivetti Corp of Amer
1900 Canal St
504-561-8888

MD Baltimore
Olivetti Corp of Amer
6322 Security Blvd
301-944-7000

MA Boston
Olivetti Corp of Amer
1255 Boylston St
617-266-4970

MI Madison Heights
Olivetti Corp of Amer
1401 W Girard Ave
313-543-3800

MN Minneapolis
Olivetti Corp of Amer
One Appletree Sq
612-853-0300

MO Kansas City
Olivetti Corp of Amer
3801 SW Trafficway
816-531-3805

MO St Louis
Olivetti Corp of Amer
110 N Jefferson Ave
314-241-5090/2648

NE Omaha
Olivetti Corp of Amer
3172 Dodge St
402-344-4727

NJ Mountainside
Olivetti Corp of Amer
1130 Globe Ave
201-233-5950

NY Woodside
Olivetti Corp of Amer
37-15 61 St
212-779-0100

NY Westbury
Olivetti Corp of Amer
25 Carle Rd
516-333-9696

NY New York
Olivetti Corp of Amer
219 E 42 St
212-599-4030

NC Greensboro
Olivetti Corp of Amer
2905 Battleground Ave

NC Raleigh
Olivetti Corp of Amer
Box 31146

OH Cincinnati
Olivetti Corp of Amer
3032 Woodburn Ave
513-221-2700

OH Cleveland
Olivetti Corp of Amer
5700 W Canal Rd
216-524-8300

OH Columbus
Olivetti Corp of Amer
690 S High St
614-443-0536

OH Dayton
Olivetti Corp of Amer
5335 Springboro Pike
513-298-6570

OH Toledo
Olivetti Corp of Amer
4253 Monroe St
419-473-1161

PA Allentown
Olivetti Corp of Amer
4016 Hamilton Blvd
215-433-4111

PA Bala Cynwyd
Olivetti Corp of Amer
23 City Line Ave
215-839-4430

PA Pittsburgh
Olivetti Corp of Amer
Parkway West; Rt 60E
412-923-1080

PA Reading
Olivetti Corp of Amer
2230 N Fifth St
215-373-5101

RI Providence
Olivetti Corp of Amer
310 Reservoir Ave
401-467-9300

TN Nashville
Olivetti Corp of Amer
230 - F Cumberland Rd
615-244-7030

TX Austin
Olivetti Corp of Amer
1016 W 6 St
512-477-6726

TX Dallas
Olivetti Corp of Amer
2600 Forest Ln
214-243-4303

TX Houston
Olivetti Corp of Amer
3773 SW Frwy
713-961-5050

TX San Antonio
Olivetti Corp of Amer
226 W Cypress
512-227-0351

UT Salt Lake City
Olivetti Corp of Amer
525 E Third St
801-531-8441

VA Norfolk
Olivetti Corp of Amer
6340 Center Dr
804-461-1101

VA McLean
Olivetti Corp of Amer
1768 Old Meadow Rd
703-356-0420

WA Seattle
Olivetti Corp of Amer
1127 Pine St
206-623-8010

WI Milwaukee
Olivetti Corp of Amer
7918 W Capital Dr
414-462-5300

OMNITEC DATA
2405 S 20th St
Phoenix, AZ 85034
602-258-8244
Advertising page 62
Contact: Joseph Caccavale
■ Products & Services
Acoustic couplers
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
EIA cable testers
Response-time monitors
Automatic answering units
Automatic calling units
Cables, electrical prefabricated extender
Data access arrangement devices
Switches, data communications, automatic
Switches, data communications, manual
Data communications consultants
Maintenance organizations
Used equipment

Branch Sales Offices:

CT Greenwich
Data Dimensions Inc
51 Weaver St
203-661-1700

IL Elmhurst
International Computer Equip
772 N Church Av
312-279-1960

IL Chicago
H H Sales
1507 N Dearborn
312-733-4478

NJ Roselle
Teletypewriter Service Corp
155 E 1st Av
201-245-6333

ON-LINE SOFTWARE INT'L
65 Rt 4 E
River Edge, NJ 07661
201-488-7770
Contact: VP Mktg
■ Products & Services
Data communications consultants
Data com. softw, independ. softw houses

ONTEL CORP
250 Crossways Park Dr No
Woodbury, NY 11797
516-364-2121
Contact: Frank Kirby

OPTIMA DIV/SCIENTIFIC-ATLANTA
2166 Mountain Industrial Blvd
Tucker, GA 30084
404-939-6340
Contact: Karen Yousefian
■ Products & Services
Furniture, cabinets, terminal enclosures
Branch Sales Offices:

AL Huntsville
Beacon Electronics
11309 S Memorial Pkwy
205-881-5031

AZ Scottsdale
Arcom Sales Co
7300 E Stetson Dr
602-947-5745

CA Santa Fe Springs
Scientific-Atlanta Inc
10039 Pioneer Blvd
213-949-9571

CA Tustin
Xebex
18410 Irvine Blvd
714-832-2630

CA Los Altos
Frauman Assoc
289 San Antonio Rd
415-941-0660

CO Boulder
Front Range Mktg Inc
1531 Broadway
303-443-4780

FL Melbourne
Beacon Electronics
316 Laurie St
305-259-0648

FL Ft Lauderdale
Beacon Electronics
6842 NW 20 Ave
305-971-7320

FL Maitland
Beacon Electronics
Box 1278
305-647-3498

FL Ft Walton Beach
Beacon Electronics
Box 125
904-244-1550

GA Atlanta
Beacon Electronics
6135 Barfield Rd
404-256-9640

IL Arlington Heights
Diethert/Angel Co
2400 Oakton St
312-593-7600

KS Derby
Palatine Sales Inc
221 W Market St
316-788-0621

KS Mission
Palatine Sales Inc
5801 Outlook
913-831-0555

MD Randallstown
Beacon Electronics
8513 Lucerne Rd
800-336-3747

MA Lexington
Zieco Inc
18 Muzzey St
617-861-8300

MI Southfield
L H Dickelman Co
24301 Telegraph Rd
313-353-8210

MN St Paul
Recco Inc
1136 W Larpenteur Ave
612-488-0201

MO Hazelwood
Palatine Sales Inc
346 Brookes Dr
314-895-4577

NJ Leonia
Scientific Atlanta Inc
135 Fort Lee Rd
201-461-3650

NY Rochester
Ossmann Component Sales Corp
280 Metro Pk
716-424-4460

NY Syracuse
Ossmann Component Sales Corp
154 Pickard Bldg
315-455-6611

NC Greensboro
Beacon Electronics
1207 W Bessemer Ave
919-275-9997

OH Cleveland
C A Robinson Co Inc
5010 Mayfield Rd
216-381-9049

OH Dayton
C A Robinson Co Inc
26 W Nottingham Rd
513-275-2412

TN Oak Ridge
Beacon Electronics
100 Tulsa Rd
615-482-2409

TX Ft Worth
Carey Wolf and Assoc
Box 12425
817-738-1996

TX Houston
Carey Wolf and Assoc
9727 Fondren
713-771-1500

UT Sandy
Front Range Mktg Inc
1811 E 9880 St
801-943-0402

VA Lynchburg
Beacon Electronics
309 Bedford Springs Rd
800-572-0405

VA Falls Church
Beacon Electronics
7115 Leesburg Pike
800-336-3747

WA Seattle
S J I Corp
626 Alaska St
206-624-9020

ONTARIO, CANADA
Mississauga ON
Scientific Atlantic Ltd
1640 Bonhill Rd
416-677-6555

ISRAEL
Tel Aviv
Racom Electronics Co Ltd
60 Pinkas St
03-453151

MALAYSIA FED OF
Kuala Lumpur
Pernas Plessey Elect Sdn Bhd
Wisma Bintang, 47-49 Jalan Bukit
Bintang
89321

REPUBLIC OF CHINA
Taipei
Syscom Computer Eng Co
Box 48-130
02-7026284

SCOTLAND
Macmerry East Lothian
McKertrick Agnew & Co Ltd
Great No Rd
Tranent 0875-610747

SINGAPORE
Singapore 6
Plessey Singapore Private Ltd
47 Hill St
362133

PACIFIC CYBER/METRIX INC
3120 Crow Canyon Rd
San Ramon, CA 94583
415-837-5400
Contact: Attn: VP Mktg
■ Products & Services
Add-on main memory
Tape punch/reader, paper
Computer/communications interfaces

PANAFAX CORP
185 Froehlich Farm Blvd
Woodbury, NY 11797
516-364-1400
Contact: Tom Catherines
■ Products & Services
Facsimile terminals
Automatic answering units
Automatic calling units
Data access arrangement devices
Branch Sales Offices:
CA Hayward
Panafax Corp
24219 Clawiter Rd
415-785-5810
IL Franklin Park
Panafax Corp
4045 Tugwell Dr
312-671-6022

PANSOPHIC SYSTEMS INC
709 Enterprise Dr
Oakbrook, IL 60521
312-986-6000
Contact: Attn: VP Mktg
■ Products & Services
Data com. softw, independ. softw houses
Branch Sales Offices:
CA El Segundo
Pansophic Systems Inc
2230 E Imperial Hwy
213-640-2910
GA Atlanta
Pansophic Systems Inc
6520 Powers Ferry Rd
404-955-3763
IL Oak Brook
Pansophic Systems Inc
2122 York Rd
312-986-6070
TX Dallas
Pansophic Systems Inc
12810 Hillcrest Rd
214-233-0486

VA McLean
Pansophic Systems Inc
1651 Old Meadow Rd
703-893-0350

PARADYNE CORP
8550 Ulmerton Rd
Largo, FL 33540
1-813-536-4771
Contact: Jay Hill
■ Products & Services
Concentrators
Inverse multiplexers
Line sharing units
Minicomputers
Modem sharing units
Multiplexers, intelligent
Port sharing units
Remote network processors
Modems, limited distance
Modems, multipoint
Modems, voice-grade, high-speed
Modems, wideband, half-group band
Modems, wideband, group band
MIL 188C adapters
Network management centers
Batch terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Automatic answering units
Automatic calling units

Branch Sales Offices:
CA Garden Grove
Paradyne Corp
12792 Valley View
714-894-7526
GA Tucker
Paradyne Corp
2191 Northlake Pkwy
404-934-5590
MI Detroit
Paradyne Corp
29350 Southfield Rd
313-559-5360
NY Hackensack
Paradyne Corp
Two University Plaza
201-342-8100
WA Alexandria
Paradyne Corp
700 N Fairfax St
703-548-4453

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announcements.
Turn to **UpDate Service Card,**
page 201.

PERTEC COMPUTER CORP
PERIPHERALS DIV
Box 2198
Chatsworth, CA 91311
213-999-2020
Contact: Carol Hays
■ Products & Services
Cartridge drives
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Branch Sales Offices:
AZ Scottsdale
BFA Corp
4426 N Saddlebag Tr
602-994-5400
CA Encino
PCC/Pertec Div
17835 Ventura Blvd
213-996-1333

- CA San Jose
PCC/Pertec Div
675 N First St
- CO Denver
BFA Corp
12015 E 46 Ave; Campus Six
303-371-2422
- CT Stamford
PCC/Pertec Div
35 West Lane
203-348-3949
- FL Cocoa Beach
PCC/Pertec Div
1325 N Atlantic Ave
305-784-5220
- IL Rolling Meadows
PCC/Pertec Div
One Crossroads of Commerce
312-253-2380
- NH Hudson
PCC/Pertec Div
Box 263
603-883-2100
- NM Albuquerque
BFA Corp
3705 Westerfield NE
505-292-1212
- NM Las Cruces
BFA Corp
312 W Parker
505-523-0601
- OR Portland
Pacific Northwest Elect
2035 SW 58 St
- PA King of Prussia
PCC/Pertec Div
1150 First Ave
215-265-8310
- TX Dallas
PCC/Pertec Div
13500 Midway Rd
214-387-2817
- UT Salt Lake City
BFA Corp
395 Lawndale Dr
801-466-6522
- WA Bellevue
Pacific Northwest Elect
14264 SE Eastgate Way
206-641-6444
- BRITISH COLUMBIA, CANADA
W Vancouver
Tracan Electronics Western Ltd
1144 Millstream Rd
604-926-3411
- AUSTRALIA
Artarmon NSW 2064
Digital Electronics
66-76 Dickson Ave
438-2444
- AUSTRIA
Burisch GABH
Scheggdgosse 31
- BELGIUM
Bruxelles
Sait Electronics SA
Chaussee de Ruisbroek 66
376-20-30
- DENMARK
Naerum
SC Metric A/S
Skodsborgvej 305
02-80-4200
- ENGLAND
Reading
PCC/Pertec Div
10 Portman Rd
UK-734-582115
- FINLAND
Ahertajantie
Finn Metric OY
460844
- FRANCE
Boulogne
Reptec
16 Rue Louis Pasteur
01-603-6856
- GERMANY, WEST
Frankfurt am Main-Griesheim
PCC/Pertec Div
Eichenstrasse 59
0-611-393340
- ISRAEL
Tel-Aviv
I S Information Systems
Box 43070
03-483261-2-3
- ITALY
20146 Milano
Computer Technology Italeo
Via Wenckelmann 2
2-423-9883
- JAPAN
Tokyo
Marubun
1-1 Nihombashi
Odemmecho; 2-Chome
Chuo-ku
03-662-8151
- NETHERLANDS
The Hague
Nenimij B V
Laan Copes van; Cattenburch
76-78
70-469509
- NEW ZEALAND
Takapuna Auckland
David Reid Data Products
3-5 Auburn St
492-189
- NORWAY
Oslo
Metric AS
Box 85
2-28-26-24
- SOUTH AFRICA
Transvaal
CSSL Ltd
Box 31497
724-9301
- SPAIN
Madrid
Unitronics SA
Princesa I
241-1496
- SPAIN
Barcelona
Unitronics SA
Infanta Carlota 74-78
239-2655
- SWEDEN
Stockholm
Scandia Metric AB
Fack
08-820400
- SWITZERLAND
Zurich
A Meyer & Co
Feldeggsstraasse 26
01-474174
- PCS INC
750 N Maple Rd
Saline, MI 48176
Contact: Dave Thomas
■ Products & Services
Batch terminals
Intelligent (programmable) terminals
Remote job entry terminals
Video data terminals (KSR)
- Video data terminals (RO)
Computer/communications interfaces
Data com. softw. intel. term. vendors
- Branch Sales Offices:
- CA Hayward
Process Computer Systems Inc
3423 Investment Blvd
415-786-3472
- CA Orange
Process Computer Systems Inc
201 S Anita St
714-771-2450
- CA El Segundo
Process Computer Systems Inc
2041 Rosecrans Ave
213-322-0047
- CO Denver
PAR Assoc
3333 Quebec
303-355-2363
- CT Danbury
Process Computer Systems Inc
Four Franklin St
203-792-0151
- CT Bloomington
Dynage Inc
1331 Blue Hills Ave
203-243-0315
- FL West Palm Beach
Process Computer Systems Inc
707 Chillingworth Dr
305-686-3663
- IL Elk Grove Village
Process Computer Systems Inc
500 E Higgins Rd
312-640-9804
- ME New Bedford
Yes Computer Sciences
3090 Acushnet Ave
617-998-2131
- MA Wakefield
Process Computer Systems Inc
One Lakeside Office Park
617-246-2544
- MI Saline
Process Computer Systems Inc
750 N Maple Rd
313-429-4971
- MN St Paul
Cullen & Assoc
1595 Selby Ave
612-646-7371
- NJ Budd Lake
Process Computer Systems Inc
140 Route 46
201-691-9494
- OH Cincinnati
Zonic Technical Labs
8927 Rossash Rd
513-891-6390
- PA Devon
Process Computer Systems Inc
237 Lancaster Ave
215-687-0186
- TX Dallas
Process Computer Systems Inc
255 Webb Chapel Village
214-243-1644
- TX Houston
Automation Inc
5255 Langfield
713-462-0060
- QUEBEC, CANADA
Laval PQ
Process Computer Systems Inc
3945 St Martin Blvd
514-681-1681
- AUSTRALIA
Clayton Victoria
Kenelec (Aust) Pty Ltd
48 Henderson Rd

ENGLAND

Billinghurst Sussex
Computer Techniques Ltd
Brookers Rd

ITALY

Milano
IDEA SPA
Via Camperio 9

JAPAN

Kitakyushu-City 803
Asahi Electronics Co Ltd
14-28 Tamachi;Kokurakita-Ku

SWEDEN

Stockholm
Scantele AB
Rosenlundsgatan 52

SWITZERLAND

Brugg
Interautomation AG
Neumarkt;Postfach 365

TAIWAN

Taipei
Syscom Computer Eng Co
Box 48-130

PENRIL CORP

DATA COMMUNICATIONS DIV

5520 Randolph Rd
Rockville, MD 20852
301-881-8151

Advertising page 59

Contact: Joseph Scarpa

■ Products & Services

Modem sharing units
Port sharing units
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Modems, wideband, half-group band
Modems, wideband, group band
Modems, wideband, super-group band
MIL 188C adapters
Data access arrangement devices

Branch Sales Offices:

AL Huntsville

W A Brown Instruments
Box 4560
205-883-8660

CA

Mountain View
CSS Telecommunications
Specialists
2680 Bayshore Frontage Rd
415-964-4335

CA

Irvine
CSS Telecommunications
Specialists
3 Trenton St W
714-559-4403

CO

Littleton
Davis Assoc
709 W Littleton Blvd
313-996-8077

CT

Stratford
Instrument Dynamics Inc
Foot of Broad St
203-378-6019

FL

Ft Lauderdale
W A Brown Instruments
961 NW 53 St
305-776-4800

FL

Melbourne
W A Brown Instruments
Box 1406
305-723-0766

FL

Orlando
W A Brown Instruments
Box 513
305-425-5505

FL

Tallahassee
W A Brown Instruments
1325 E Tenn St
904-878-6642

GA

Atlanta
W A Brown Instruments
3070 Presidential Dr
404-455-1035

LA

Mandeville
W A Brown Instruments
Box 786
504-626-9701

MD

Bethesda
S&S Assoc
4924 Hampden La
301-654-1434

MA

Wakefield
Instrument Dynamics Inc
Lakeside Office Pk
617-245-5100

MI

Ann Arbor
G Gerhard & Assoc
2321 Lanchashire 1A
313-996-8077

MN

Eden Prairie
First Rep Co
6420 Flying Cloud Dr
612-944-2097

MO

St Charles
Atech
Box 396
314-441-5010

NY

Elmont
Crane & Egert Corp
146 Meacham Av
516-488-2100

NY

Fairport
Tac Sales Inc
216 Village Landing
716-488-1070

NC

Durham
W A Brown Instruments
123 1/2 Orange St
919-682-2383

OH

Columbus
G Gerhard & Assoc
2228 Fairfax Rd
614-488-9751

OK

Tulsa
Comspec Inc
Box 7597
918-743-6892

PA

Media
Klinetics Inc S&S Div
9 W Third St
215-565-5388

PA

McMurray
G Gerhard & Assoc
435 Robinhood Ln
412-941-5954

SC

Columbia
W A Brown Instruments
1201 St Andrews Rd
803-798-8070

TN

Oak Ridge
W A Brown Instruments
733 Emory Valley Rd
615-482-5761

TX

Houston
Comspec Inc
Box 79438
713-461-4487

TX

Austin
Comspec Inc
Box 15911
512-837-3881

TX

Richardson
Comspec Inc
Box 693
214-234-4138

WA

Seattle
CSS Telecommunications
Specialists
15841 32nd Av NE
206-367-1440

PR

Santurce
Glen Allen & Co
809-781-3366

BRITISH COLUMBIA, CANADA

Vancouver
Megatronix Ltd
7724 Edmonds St
604-526-3312

ONTARIO, CANADA

Montreal
Megatronix Ltd
330 Cavendish Blvd
514-488-0404

ONTARIO, CANADA

Ottawa
Megatronix Ltd
346 Richmond Rd
613-729-4004

ONTARIO, CANADA

Weston
Megatronix Ltd
100 Penn Dr
416-742-8015

AUSTRALIA

Huntingdale Victoria
Email Ltd Relays Div
544-8244

BOLIVIA

La Paz
Coasin Bolivia SRL
40962

ENGLAND

London
Redifon Telecommunications Ltd
01-8747281

INDIA

Bombay
Bali International Agencies
53-30-76

IRAN

Tehran
Parsionic Engineering Group
666716

ISRAEL

Tel-Aviv
ALM Electronics Ind Ltd
03-413721

KUWAIT

Kuwait
Sa'id Al-Daham
414890

MALAYSIA FED OF

Selangor
Syarikat Asean Saintifik
03-775015

PHILIPPINES

Manila
Alejandro Enterprises
40-46-39

REPUBLIC OF CHINA

Taipei, Taiwan
Sun Moon Star Co Ltd
5818521

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

PERIPHONICS CORP

75 Orville Dr
Bohemia, NY 11716
516-567-1000
Contact: Gary Galati
■ Products & Services
Concentrators

Front-end processors
 Message switchers
 Minicomputers
 Modems, limited distance
 Modems, voice-grade, low-speed
 Add-on main memory
 Audio response units
 Intelligent (programmable) terminals
 Automatic answering units
 Automatic calling units
 Modem eliminators
 Switches, data communications, automatic
 Data com. softw, comms processor vend.
 Maintenance organizations

Branch Sales Offices:

CA Irvine
 Peripherals Corp
 2171 Campus Dr
 714-833-8850

CA San Carlos
 Peripherals Corp
 1011 Commercial St
 415-592-1013

GA Atlanta
 Peripherals Corp
 6065 Roswell Rd NE
 404-252-6966

IL Rosemont
 Peripherals Corp
 10400 W Higgins Rd
 312-296-2055

NJ Wenonah
 Peripherals Corp
 107 N Lincoln Ave
 609-468-3549

NJ Turnersville
 Peripherals Corp
 71 Bryant Rd
 609-228-3995

NY New York City
 Peripherals Corp
 1271 Ave of the Americas
 212-247-5023

NC Charlotte
 Peripherals Corp
 501 Archdale Dr
 704-525-9794

TX Dallas
 Peripherals Corp
 13773 N Central Expwy
 214-234-0979

PERKIN-ELMER

2 Crescent Place
 Oceanport, NJ 07757
 201-228-6800
 Contact: Michael Caiafa
 ■ Products & Services
 Concentrators
 Front-end processors
 Message switchers
 Minicomputers
 Multiplexers, intelligent
 Packet processors
 Remote network processors
 DDP systems
 Add-on main memory
 Cartridge drives
 Cassette drives
 Disc drives, large
 Tape drives, magnetic
 Tape punch/reader, paper
 Graphic display terminals
 Intelligent (programmable) terminals
 Interactive systems
 Remote job entry terminals
 Data communications consultants
 Data com. softw, comms processor vend.
 Data com. softw, distr. dp systems vend.

Branch Sales Offices:

AL Huntsville
 Perkin-Elmer Data Systems
 3313 Memorial Pkwy SE
 205-881-3750

AZ Tempe
 Perkin-Elmer Data Systems
 2121 S Mill Ave
 602-894-9121

CA Santa Clara
 Perkin-Elmer Data Systems
 3255 Scott Blvd
 408-249-5540

CA San Diego
 Perkin-Elmer Data Systems
 9420 Farnham St
 714-565-0602

CA San Francisco
 Perkin-Elmer Data Systems
 3 & Market Sts
 415-543-2863

CO Denver
 Perkin-Elmer Data Systems
 7801 E Bellevue Ave
 303-773-2855

CT Bloomfield
 Perkin-Elmer Data Systems
 44 Winton Bury Mall
 203-243-9595

FL Orlando
 Perkin-Elmer Data Systems
 7200 Lake Ellenor Dr
 305-851-6962

GA Atlanta
 Perkin-Elmer Data Systems
 3400 Oakcliff Rd
 404-457-6361

IL Arlington Heights
 Perkin-Elmer Data Systems
 415 W Golf Rd
 312-437-5120

LA Baton Rouge
 Perkin-Elmer Data Systems
 6461 Siegen Ln
 504-293-3540

MA Waltham
 Perkin-Elmer Data Systems
 318 Bear Hill Rd
 617-890-0557

MI Oak Park
 Perkin-Elmer Data Systems
 22150 Greenfield Rd
 313-968-2777

MO St Louis
 Perkin-Elmer Data Systems
 760 Office Pkwy
 314-569-1817

NJ Englewood Cliffs
 Perkin-Elmer Data Systems
 140 Sylvan Ave
 201-947-2200

NY Binghamton
 Perkin-Elmer Data Systems
 One Marine Midland Plaza
 607-722-4233

NY Rochester
 Perkin-Elmer Data Systems
 120 Aliens Creek Rd
 716-442-6840

OH Highland Heights
 Perkin-Elmer Data Systems
 195 Alpha Park
 216-461-8344

TX Dallas
 Perkin-Elmer Data Systems
 13771 N Central Exp
 214-234-8880

TX Houston
 Perkin-Elmer Data Systems
 6610 Harwin Dr
 713-783-3060

VA McLean
 Perkin-Elmer Data Systems
 1764 Old Meadow La
 703-827-5900

PERKIN ELMER MEMORY PRODUCTS DIV

7301 Orangewood Ave
 Garden Grove, CA 92641
 714-891-3711
 ■ Products & Services
 Disc drives, large
 Tape drives, magnetic

Branch Sales Offices:

CA Tustin
 Perkin Elmer Memory Products Div
 17461 Irvine Blvd
 714-544-9093

CA Santa Clara
 Perkin Elmer Memory Products Div
 325 Scott Blvd
 408-249-5540

FL Orlando
 Perkin Elmer Memory Products Div
 720 Lake Ellenor Dr
 305-851-6962

MA Waltham
 Perkin Elmer Memory Products Div
 318 Bear Hill Rd
 617-890-9264

MN Minneapolis
 Perkin Elmer Memory Products Div
 10800 Lyndale Ave
 612-884-1100

NJ Randolph
 Perkin Elmer Memory Products Div
 Route 10 & Emery Ave
 201-361-1616

TX Dallas
 Perkin Elmer Memory Products Div
 13773 N Central Expwy
 214-234-5785

ENGLAND

Slough Berkshire
 Perkin Elmer Memory Products Div
 227 Bath Rd
 753-34511

FRANCE

94110 Arcueil
 Perkin Elmer Memory Products Div
 83/85 Ave Artiste Briand
 01-664-14-58

GERMANY, WEST

8000 Muenchen
 Perkin Elmer Memory Products Div
 Seidlstrasse 8
 089-558391

JAPAN

Minato-Ku
 Perkin Elmer Memory Products Div
 1-9-1 Shiba-Daimon
 03-438-0066

NETHERLANDS

The Netherlands
 Perkin Elmer Memory Products Div
 1117 ZM Schiphol Oost
 020-458-269

PERKIN-ELMER TERMINALS DIV

360 Rt 206 S
 Flanders, NJ 07836
 201-584-1400
 Contact: John A W Richardson
 ■ Products & Services
 Acoustic couplers
 Intelligent (programmable) terminals
 Teleprinters, impact
 Teleprinters, non-impact
 Video data terminals (KSR)
 Data com. softw, intel. term. vendors

Branch Sales Offices:

- CA Santa Clara
Perkin-Elmer Terminals
3255 Scott Blvd
408-249-5540
- CA Tustin
Perkin-Elmer Terminals
17461 Irvine Blvd
714-544-9093
- IL Arlington Hts
Perkin-Elmer Terminals
415 W Golf Rd
312-437-3547
- MA Waltham
Perkin-Elmer Terminals
318 Bear Hill Rd
617-890-1305
- NJ Oceanport
Perkin-Elmer Terminals
2 Crescent Pl
201-229-4040

PER SCI INC

12210 Nebraska Av
Los Angeles, CA 90025
213-820-7613
Contact: Darlene Brown
■ Products & Services
Disc drives, floppy

Branch Sales Offices:

- FL Orlando
FM Associates Ltd
5018 Mortier Av
305-851-5716
- GA Doraville
FM Associates Ltd
2523 Andover Dr
404-451-2293
- IL Chicago
Scientific Sales Corp
7257 W Touhy Av
312-775-7594
- IN Indianapolis
Scientific Sales Corp
2555 E 55 Pl
317-253-4606
- MN Bloomington
Scientific Sales Corp
9001 Bloomington Frwy
612-881-3300
- NJ Wayne
G & A Sales
30 Galesi Dr
201-256-8500
- NY Skaneateles
Per Sci Inc
3 Gayle Rd
315-685-3340
- NC Ramseur
FM Associates Ltd
106 Elam Ave
919-824-2196
- OK Tulsa
Comspec
4835 S Peoria
918-743-6892
- TX Houston
Comspec
10000 Old Katy Rd 275
713-461-4248
- TX Richardson
Comspec
717 Lingco Dr
214-234-4137
- TX Austin
Comspec
2215 Lawnmont St
512-837-3881

AUSTRIA

Scheydgasse
Burisch
A 1210 Wien
0 22-2-387638

ENGLAND

Bournsworth
Data Type Systems Ltd
West Howe Ind Estate
02016 6561/2

FRANCE

92606 Asnieres Cedex
Metrologie
4 Avenue Laurent
1 791-44-44

GERMANY, WEST

Bauerstrabe 15
Barton Automation
8000 Muchen 40
089/371621

SWEDEN

Stockholm
Bita Elektronik Svenska AB
Sveavagan 49
08 319000

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new products?

Turn to **UpDate Service Card, page
201.**

PERTEC COMPUTER CORP
CSD DIV

12910 Culver Blvd
Los Angeles, CA 90066
213-822-9914
Contact: Andrea Graham
■ Products & Services
DDP systems
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Intelligent (programmable) terminals
Interactive systems
Remote job entry terminals

Branch Sales Offices:

- AZ Phoenix
Pertec/CSD
2113 E Magnolia
602-267-7375
- CA LA
Pertec/CSD
1605 W Olympic
213-386-4132
- CA Carson
Pertec/CSD
213-532-4940
- CA San Francisco
Pertec/CSD
120 Howard
415-543-7773
- CA Sacramento
Pertec/CSD
1779 Tribute Rd
916-920-0721
- CO Lakewood
Pertec/CSD
455 Union Blvd
303-988-2020
- GA Atlanta
Pertec/CSD
1800 Century Blvd NE
404-325-5512
- HI Honolulu
Pertec/CSD
677 Ala Morra
808-536-3852
- IL Downers Grove
Pertec/CSD
1434 Brook Dr
312-620-5000
- MD Columbia
Pertec/CSD
5565 Sterrett Place
301-992-4420
- MA Lexington
Pertec/CSD
24 Hartwell
617-861-7150
- MI Troy
Pertec/CSD
755 W Big Beaver
313-362-2205
- MN Bloomington
Pertec/CSD
5001 W 80 St
612-835-2150
- MO KC
Pertec/CSD
4520 Madison Av
916-561-2532
- MO Maryland Hts
Pertec/CSD
907 Feelee Rd
314-576-4300
- NJ Springfield
Pertec/CSD
966 S Springfield Av
201-376-5300
- NY NYC
Pertec/CSD
540 Madison Av
212-832-8282
- NC Charlotte
Pertec/CSD
6525 Morrison
704-364-5620
- OH Valley View
Pertec/CSD
5811 Canal Rd
216-447-0550
- OR Portland
Pertec/CSD
4800 SW Macadam
503-223-2557
- PA Bala Cynwyd
Pertec/CSD
111 Presidential
215-667-9467
- TN Brentwood
Pertec/CSD
Rt 8 Dahlia Dr
615-748-1760
- TX Dallas
Pertec/CSD
8625 King George
214-638-1160
- TX Houston
Pertec/CSD
5200 Mitchelldale St
713-688-9956
- VA Arlington
Pertec/CSD
2341 Jeff Davis Hwy
703-920-8800
- WA Seattle
Pertec/CSD
2635 Eastlake E
206-324-2600
- WI Milwaukee
Pertec/CSD
1011 N Mayfair Rd
414-476-6123
- ALBERTA, CANADA
Calgary
Pertec Computer Can Ltd
315 10th Av SE, Ste 312
403-266-7588

BRITISH COLUMBIA, CANADA

Vancouver
Pertec Computer Can Ltd
1656 W 7 Av
604-736-5671

MANITOBA, CANADA

Winnipeg
Pertec Computer Can Ltd
1313 Border St, Unit 69
204-632-1313

ONTARIO, CANADA

Willowdale
Pertec Computer Can Ltd
2 Lansing Sq
416-498-9540

QUEBEC, CANADA

Montreal
Pertec Computer Can Ltd
1400 Sauve W, Ste 260
514-331-1667

PHONE 1 INC

Box 1522
Rockford, IL 61110
815-962-8927
Contact: Richard Newberry
■ Products & Services
Concentrators
Multiplexers, intelligent
Disc drives, floppy
Tape, paper
Audio response units
Badge readers
Digitized voice processors
Video data terminals (KSR)

Branch Sales Offices:

CA Granada Hills
Phone 1 Inc
13360 Meadow Wood Ln
213-368-6211

MI Flushing
Micro-Terminal Sales
204 Dutch Mill
313-659-2100

NY Middletown
National Data Prods
1 Tall Timber Rd
201-671-5050

OH Columbus
Miltronics
3809 Colonial Dr
812-376-6321

PA Coopersburg
Pleasant Valley Assoc
RD1, Box 405
215-346-8684

TX Dallas
Computer Peripherals
Box 400325
214-361-6411

PLANTRONICS/SANTA CRUZ

Box 635
Santa Cruz, CA 95061
408-426-5858
Contact: Joe Campton
■ Products & Services
Modems, voice-grade, low-speed
Video data terminals (KSR)

PLESSEY FAIRFIELD

DIV PLESSEY INC
1275 Bloomfield Av
Fairfield, NJ 07006
201-227-1106
Contact: Robert Sterling
■ Products & Services
Concentrators
Front-end processors
Message switchers
Minicomputers

Multiplexers, time division
Multiplexers, intelligent
Remote network processors
Network management centers
Intelligent (programmable) terminals
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

CA Sunnyvale
Talus Corp
292 Commercial St
408-378-8274

NY New York
RAV Communications
50 Broadway
212-422-1360

VA Arlington
International Technology Corp
2909 Wilson Blvd
703-524-5476

PLESSY PERIPHERAL SYSTEMS

17466 Daimler
Irvine, CA 92714
714-540-9945
Contact: Marsha Cook
■ Products & Services
Minicomputers
Add-on main memory
Cartridge drives
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Intelligent (programmable) terminals
Interactive systems
Remote line printers
Remote job entry terminals
Teleprinters, impact
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Computer/communications interfaces
Furniture, cabinets, terminal enclosures
Data com. softw. intel. term. vendors

Branch Sales Offices:

CA Santa Ana
Plessey Peripheral Systems
1580 E Edinger Unit Q
714-972-8966

MA Waltham
Plessey Peripheral Systems
460 Totten Pond Rd
617-890-2654

MN Minneapolis
Plessey Peripheral Systems
8120 Penn Ave S
612-881-0190

TX Dallas
Plessey Peripheral Systems
4300 Alpha Rd
214-387-0229

POLYMORPHIC SYSTEMS

460 Ward Dr
Santa Barbara, CA 93111
805-967-2351
Contact: Toby Snitkin Bradley
■ Products & Services
Modem sharing units
Error rate detectors
Add-on main memory
Cassettes
Disc drives, floppy
Discs, floppy
Graphic display terminals
Interactive systems
Furniture, cabinets, terminal enclosures

POWERTEC INC

20550 Nordhoff St
Chatsworth, CA 91311
213-882-0004
Contact: Joanne N Felis
■ Products & Services
Power supplies, uninterruptible; line
correctors, etc.

Branch Sales Offices:

CA Los Altos
Powertec Inc
399 Main St
415-941-9016

CO Englewood
Barnhill III
7076 S Alton Way
303-779-3600

CT Hamden
Pat Jenks Assoc
2315 Whitney Av
203-281-0810

FL Casselberry
EIR
450 Seminola Blvd
305-830-9600

IL Morton Grove
Powertec Inc
5800 Madison
312-966-6225

MD Wheaton
Data Systems Mktg
11141 Georgia Av
301-933-0900

MI Brighton
SAI Mktg
Box N
313-227-1786

MN Bloomington
Northport Eng
7837 12th Av
612-854-5556

NJ Bogota
Neville & Vespo
114 E Main St
201-487-1505

NY Endicott
Tech-Mark
101 Jefferson Av
607-748-7473

NC Winston-Salem
Murcota
1106 Burke St
919-722-9445

PA Huntingdon Valley
Knowles Assoc
1 Fairview Plaza
215-947-5641

PA Jenkintown
Powertec Inc
Benjamin Fox Pavilion
215-572-1856

TX Houston
US Data Assoc
4800 W 34 St
713-681-0200

WA Bellevue
Al Smith Co
405 166 SE
206-746-6770

QUEBEC, CANADA

Montreal
John G Weiss Co Ltd
5725 Monkland Av
514-489-6887

PRECISION MONOLITHICS INC

1500 Space Park Dr
Santa Clara, CA 95050
■ Products & Services
Voice digitizers

PRENTICE CORP

795 San Antonio Rd
Palo Alto, CA 94303
415-494-7225

Advertising page 60

Contact: Bill Myers

■ **Products & Services**

Multiplexers, frequency division
Multiplexers, intelligent
Line drivers
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed

Branch Sales Offices:

AL Huntsville
James L Highsmith & Co
2809 Triana Blvd SW
205-536-6666

AZ Phoenix
Datatrend
2739 W Palm La
602-272-7139

CA Sausalito
Distributed Data Products
200 Gate 5 Rd
415-332-2440

CA Los Angeles
The Thorson Co
520 S Sepulveda Blvd
213-476-1241

CA Goleta
The Thorson Co
340 S Kellogg Ave
805-964-8751

CA Irvine
The Thorson Co
17775 Main St
714-557-4460

CA Alhambra
The Thorson Co
624A N Garfield Ave
213-281-2280

CO Englewood
Thorson Rocky Mountain Inc
7076 S Alton Way
303-779-0666

FL Boca Raton
James L Highsmith & Co
4190 NW Oak Cir
305-368-9194

FL Orlando
James L Highsmith & Co
2545 Industrial Blvd
305-293-5202

HI Honolulu
Territorial Electronics Inc
1221 Kaysiolani Blvd
808-521-8724

MA Fairhaven
Data Brain
Box 161
617-994-3944

MI Brighton
Robert Lowry & Assoc
135 West North St
313-227-7067

MN St Paul
Dytec Inc
1821 University Av
612-645-5816

MO St John's
Mid-West Mktg
3606 Woodson Rd
314-426-2500

NJ East Orange
Friedman Assoc
134 Evergreen Pl
201-673-2500

NJ W Berlin
QED Electronics Inc
4 Eastwood Dr
609-346-9310

NM Albuquerque
Data Handling Co
218 Manzano Av NE
505-268-4364

NY Utica
Naco Electronics
2631 Edgewood Rd
315-732-1801

NY Fairport
Naco Electronics
17 Meadow Port Trail
716-223-4490

NY N Syracuse
Naco Electronics
Box 276
315-699-2651

NC Charlotte
James L Highsmith & Co
3733 Monroe Rd
704-333-7743

OH Dayton
Robert Lowry & Assoc
1524 Marsetta Dr
513-429-9040

OH Cleveland
Robert Lowry & Assoc
24200 Chagrin Blvd
216-464-8113

OH Columbus
Robert Lowry & Assoc
1050 Freeway Dr N
614-436-2051

OR Portland
Distributed Data Products
6443 SW Beaverton
503-297-3738

PA Hatboro
QED Electronics Inc
300 No York Rd
215-674-9600

PA Pittsburgh
Robert Lowry & Assoc
7 Parkway Ctr
412-922-5110

TX Dallas
The Thorson Co
4445 Alpha Rd
214-233-5744

TX Houston
The Thorson Co
6633 Hillcroft
713-771-3504

TX Austin
The Thorson Co
300 E Huntland Dr
512-451-7527

UT Salt Lake City
Thorson Rocky Mountain
3691 W 1987 S
801-973-7969

VA Richmond
James L Highsmith & Co
2604-D Buford Rd
804-272-5888

WA Seattle
Distributed Data Products
1200 Westlake Av
206-283-4044

ENGLAND Reading
Interlekt Rathbart Ltd
Reacis House, Portman Rd
011-44-734-596226

GERMANY, WEST

Frankfurt
Telemation GmbH
6 Frankfurt/Main 1; Feldbergstra Be 25
0611-723418

NETHERLANDS

503HR Veldhoven
Simac Electronics
Veenstraat 20
040-533725

For further catalog information,
turn to **UpDate Service**
Card, page 201.

PRIME COMPUTER INC

40 Walnut St
Wellesley Hills, MA 02181
617-237-6990

Advertising page 103

Contact: Robert Morrill

■ **Products & Services**

Minicomputers
DDP systems
Add-on main memory
Disc drives, large
Disc packs
Tape, magnetic
Tape drives, magnetic
Interactive systems
Teleprinters, impact
Video data terminals (KSR)
Video data terminals (RO)
Computer/communications interfaces
Paper for terminals
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.
Maintenance organizations

Branch Sales Offices:

AL Huntsville
Prime Computer Inc
3315 S Memorial Pkwy
205-883-2120

AZ Phoenix
Prime Computer Inc
5125 N 16 St
602-264-4264

CA Irvine
Prime Computer Inc
2120 Business Center Dr
714-975-0262

CA Palo Alto
Prime Computer Inc
2479 Bayshore Dr
415-856-1900

CA Sacramento
Prime Computer Inc
601 University Ave
916-929-7523

CA San Diego
Prime Computer Inc
444 Camino del Rio S
714-293-7420

CA San Francisco
Prime Computer Inc
1 Market Plaza
415-543-9213

CA Tarzana
Prime Computer Inc
18321 Ventura Blvd
213-881-8433

CO Denver
Prime Computer Inc
700 S Colorado Blvd
303-758-6317

CT Stamford
Prime Computer Inc
200 Broad St
203-357-9750

- FL Orlando
Prime Computer Inc
6900 S Orange Blossom Trail
305-855-0040
- GA Atlanta
Prime Computer Inc
5801 Peachtree Dunwoody Rd
404-252-8900
- IL Oak Brook
Prime Computer Inc
2803 Butterfield Rd
312-920-6750
- IN Indianapolis
Prime Computer Inc
9000 Keystone Crossing
317-884-7500
- MA Wellesley
Prime Computer Inc
1 Washington St
617-237-2205
- MI Grand Rapids
Prime Computer Inc
1550 E Biltmore Ave SE
616-957-1150
- MI Troy
Prime Computer Inc
755 W Big Beaver
313-362-0050
- MN Bloomington
Prime Computer Inc
2950 Metro Dr
612-854-5976
- MO St Louis
Prime Computer Inc
1810 Craig Rd
314-576-0010
- NJ Mountainside
Prime Computer Inc
240 Sheffield St
201-654-6270
- NY Albany
Prime Computer Inc
1237 Central Ave
518-459-5330
- NY New York
Prime Computer Inc
405 Lexington Ave
212-687-6670
- NY Rochester
Prime Computer Inc
300 White Spruce Blvd
716-442-8690
- NC Charlotte
Prime Computer Inc
4401 Colwick Rd
704-365-2934
- OH Cincinnati
Prime Computer Inc
4050 Executive Park Dr
513-733-4330
- OH Middleburg Heights
Prime Computer Inc
16600 Sprague Rd
216-243-4900
- OR Portland
Prime Computer Inc
2039 SE Front St
503-223-7165
- PA Camp Hill
Prime Computer Inc
209 Senate Ave
701-763-7961
- PA Coraopolis
Prime Computer Inc
400 Rouser Rd:2 Airport Office
Park
412-262-3400
- PA Wayne
Prime Computer Inc
650 E Swedesford Rd
215-687-8030
- TX Austin
Prime Computer Inc
313 E Anderson Ln
512-458-8216
- TX Dallas
Prime Computer Inc
4825 LBJ Frwy
214-233-6091
- TX Houston
Prime Computer Inc
6001 Savoy Dr
713-780-8060
- VA McLean
Prime Computer Inc
1970 Chain Bridge Rd
703-821-8616
- WA Bellevue
Prime Computer Inc
1603 116 St NE
206-455-0774
- ONTARIO, CANADA
Rexdale
Prime Computer of Canada Ltd
27 Enterprise Rd
416-249-7251
- AUSTRALIA
New South Wales
Prime Computer of Australia Ltd
15 Blue St
02-929-0044
- AUSTRIA
Austria
Datamed GesMBH
Schulgasse 59
222-439-287
- DENMARK
Copenhagen
Prime Computer Scandinavia AB
2600 Glostrup
02-455430
- ECUADOR
Quito
Secor
Avenida Amazonas 1001
52-0458
- EGYPT (UAR)
Cairo
Rehimco
17 El Nakhil St
70-4482
- ENGLAND
Hounslow Middlesex
Prime Computer (UK) Ltd
Lampton Rd
01-572-6241
- FRANCE
Paris
Prime Informatique
33 Rue Fernand Forest
0772-9117
- GERMANY, WEST
Wiesbaden
Prime Computer GmbH
348 Gustav Stresemann Ring 12-16
06121-3611
- GREECE
Athens
American Computer Systems Ltd
Dionisiou Areopagitou 7
21-9228735
- ITALY
Milan
Encodex SPA
Piazzale Bian Camano 1
2-316333
- JAPAN
Tokyo
Nippon Marc W Ltd
4-30 Roppongi-Chome
586-9669
- KOREA REP (REP)
Seoul
Korea Computer Center
8-61 Galwog-Dong
793-8061
- KUWAIT
Salmiah
Fakhoury Trading Co
Salem Burarak St
61-0845
- NETHERLANDS
The Netherlands
Prime Computer Benelux BV
2715 CA Zoetermeer
79-510061
- NEW ZEALAND
Parnell Auckland
IDL Utilities Ltd
060 Parnell
799659
- NORWAY
Oslo
Prime Computer Scandinavia AB
1346 Gjettem
02-544326
- SAUDI ARABIA
Saudi Arabia
Prime Computer Inc
Riyadh CR 9328
928-20094
- SCOTLAND
Glasgow
Prime Computer Inc
141 W Nile St
041-332-2248
- SINGAPORE
Singapore
Total Computer Systems (S) Pty
Ltd
50 Kallang Bahru
293-4401
- SWEDEN
Stockholm
Prime Computer Scandinavia AB
S 17154 Solna
08-987595
- SWITZERLAND
Switzerland
Prime Computer AG
Rautistrasse 12
01-544525
- PRINTRONIX INC
17421 Derian Av
Irvine, CA 92713
714-549-8272
Contact: Peter Craig
■ Products & Services
Remote line printers
Branch Sales Offices:
AL Huntsville
Gentry Assoc
2109 W Clinton Av
205-534-9771
AZ Scottsdale
OEM Specialties
6900 E Camelback Rd
602-941-5646
CA Sunnyvale
Group III Electronics
524 Lakeside Dr
408-245-4392
CA Redondo Beach
Group III Electronics
2615 Manhattan Beach Blvd
213-973-7844
CA San Diego
Group III Electronics
8716 Production Ave
714-578-1120

- CO Denver
Par Assoc
3333 Quebec St
303-355-2363
- CT Goshen
J & J Assoc Inc
Box 2241
203-491-3585
- FL Orlando
Gentry Assoc
550 N Bumby
305-894-4401
- GA Atlanta
Gentry Assoc
16 Perimeter Park Dr
404-455-1206
- HI Honolulu
Computer Services
875 Waimanu St
808-531-5267
- IL Arlington Heights
Dytec/Central
315 W University
312-394-3380
- IN Indianapolis
Dytec/Central
25 Beechway Dr
317-247-1316
- IA Iowa City
Dytec/Iowa
Box 2148
319-683-2282
- KS Lenexa
Dytec/South
8245 Nieman Rd
913-888-0215
- KY Lexington
Lowry & Assoc Inc
Box 5127
606-273-3771
- LA Gretna
Gentry Assoc
1799 Stumpf Blvd
504-367-3975
- MD Rockville
Mesa Inc
11900 Parklawn Dr
301-881-8430
- MA Winchester
J & J Assoc
225 East St
617-729-5770
- MI Brighton
Lowry & Assoc
135 North St
313-227-7067
- MN St Paul
Dytec/North
1821 University Av
612-645-5816
- MO Hazelwood
Dytec/South
300 Brooks Dr
314-731-5400
- NJ Ft Lee
Technical Marketing Assoc
2460 Lemoine Ave
201-224-6911
- NM Albuquerque
BFA Corp
3705 Westfield NE
505-292-1212
- NM Las Cruces
BFA Corp
Box 1237
505-523-0601
- NY North Syracuse
Naco Electronics Corp
Box 276
315-699-2651
- NC Burlington
Gentry Assoc
428 Alamance Rd
919-227-3639
- OH Cleveland
Lowry & Assoc Inc
1440 Snow Rd
216-398-0506
- OH Columbus
Lowry & Assoc Inc
1050 Freeway Dr N
614-436-2051
- OH Dayton
Lowry & Assoc Inc
1524 Marsetta Dr
513-429-9040
- OR Portland
Group III Electronics
2035 SW 58
503-292-3505
- PA Ambler
Denco Data Equip
25 Skippack Pike
215-542-9876
- PA Pittsburgh
Lowry & Assoc
Seven Parkway Ctr
412-922-5110
- TX Dallas
US Data Assoc Inc
14241 Proton Rd
214-661-9633
- TX Houston
US Data Assoc Inc
4800 W 34
713-681-0200
- TX Austin
US Data Assoc Inc
3913 Medical Pkwy
512-454-3579
- WA Bellevue
Group III Electronics
14262 SE Eastgate Way
206-641-6444
- ONTARIO, CANADA
Rexdale
Ahern & Soper
31 Enterprise Rd
416-245-4848
- AUSTRALIA
New South Wales
Prime Computer
15 Blue St; N Sydney
- AUSTRIA
Vienna
Plessey Ges Mbh
Rotenturm Str 25
432 22 634 575
- BELGIUM
Brussels
C N Rood B V
37 Place de Jamblinne; de Meux
Plein
- DENMARK
2000 Kobenhavn
Sun Corp
Finsensvej 39A
399 111
- ENGLAND
Edgeware, Middlesex
Pragma Ltd
29 High St
9528471
- FRANCE
Courbevoie
Impression Enregistrement des
Resultats
132, Rue de Sebastopol
334-30-20
- GERMANY, WEST
Altheim
Computer OEM Trading GmbH
45 Kirchstrasse
011-493-622
- GREECE
Piraeus
Flame Hellas Ltd
14 Skouse
3021 452 6538
- ISRAEL
Ramat-Gan
International Peripheral
Equipment Ltd
Box 1803
724073
- ITALY
Milano
SEGI
Via Timavo
7380641
- MEXICO
Despacho, Naucalpon, EDD
BPM de Mexico S A
Blvd M Avila Camacho 40
- NETHERLANDS
Rijswijk
C N Rood B V
Box 42
- NEW ZEALAND
Wellington
C B L Datacom
89 Courtney Place
- NORWAY
N-1371 Asker
Teleinstrument A B
Box 134
472 789 460
- SOUTH AFRICA
Braamfontein
Datakor Pty Ltd
Smit & De Beer Sts
- SPAIN
Barcelona
Hardware & Software
Milanesado, 1 Bis
- SWEDEN
Vallingby
Teleinstrument AB
Box 490
- SWITZERLAND
Dubendorf
Rodata
Usterstrasse 120
8201613

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

PULSECOM DIV/HARVEY HUBBELL

5714 Columbia Pike
Falls Church, VA 22041
703-998-4300
Contact: Emil D Cardiel Jr
■ Products & Services
Line sharing units
Multiplexers, frequency division
Port sharing units
Line drivers
Modems, voice-grade, low-speed
MIL 188C adapters
Terminal controllers
Data access arrangement devices
Protocol converters
Branch Sales Offices:
AK Anchorage
Pulsecom Div/Harvey Hubbell
1371 Hillcrest Dr
907-279-5741

- CA Sebastopol
Pulsecom Div/Harvey Hubbell
1464 Cunningham Rd
707-829-2024
- GA Atlanta
Pulsecom Div/Harvey Hubbell
1471 Hearst Dr NE
404-237-0229
- HI Honolulu
Pulsecom Div/Harvey Hubbell
3207 Nimitz Hwy
808-836-2848
- MN Minnetonka
Pulsecom Div/Harvey Hubbell
18413 Spring Crest Dr
612-474-4043
- NJ Morristown
Pulsecom Div/Harvey Hubbell
11 Randolph Dr
201-540-1005
- TX Carrollton
Pulsecom Div/Harvey Hubbell
1935 Chesham Dr
214-492-2763
- VA Falls Church
Pulsecom Div/Harvey Hubbell
5714 Columbia Pike
703-998-4300
- ONTARIO, CANADA
Downsview
Electronic Systems Ltd
62 Alness St
416-661-3673
- PYROTRONICS**
8 Ridgevale Ave
Cedar Knolls, NJ 07927
201-0267-1300
■ Products & Services
Fire Detection/Protection Equipment
- QANTEL CORPORATION**
3525 Breakwater Av
Hayward, CA 94545
415-783-3410
Contact: Noel Kile
■ Products & Services
Minicomputers
DDP systems
Add-on main memory
Cartridges
Cartridge drives
Disc drives, floppy
Disc drives, large
Tape, magnetic
Audio response units
Batch terminals
Intelligent (programmable) terminals
Interactive systems
Remote line printers
Remote job entry terminals
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Data communications consultants
Data com. softw. distr. dp systems vend.
- Branch Sales Offices:
- AZ Tempe
Qantel Corporation
- AZ Tucson
Qantel Corp
- AR Little Rock
Qantel Corporation
- CA Colton
Qantel Corporation
- CA Los Angeles
Qantel Corporation
- CA Monterey
Qantel Corporation
- CA San Diego
Qantel Corporation
- CA San Mateo
Qantel Corporation
- CA Santa Fe Springs
Qantel Corporation
- CA Sacramento
Qantel Corp
- CO Denver
Qantel Corporation
- CT Windsor
Qantel Corporation
- CT Hartford
Qantel Corp
- FL Miami
Qantel Corporation
- FL Tampa
Qantel Corporation
- GA Atlanta
Qantel Corporation
- IL Oakbrook
Qantel Corporation
- IN Indianapolis
Qantel Corporation
- IN South Bend
Qantel Corporation
- LA Metairie
Qantel Corporation
- MD Hagerstown
Qantel Corporation
- MA Framingham
Qantel Corporation
- MA Boston
Qantel Corp
- MI Saginaw
Qantel Corporation
- MI Southfield
Qantel Corporation
- MN St Paul
Qantel Corporation
- MO Kansas City
Qantel Corporation
- MO Kansas City
Qantel Corporation
- NE Omaha
Qantel Corporation
- NV Las Vegas
Qantel Corporation
- NH Nashua
Qantel Corp
- NJ Woodbridge
Qantel Corporation
- NY New York
Qantel Corporation
- NY Rochester
Qantel Corporation
- NY Buffalo
Qantel Corp
- NY Scarsdale
Qantel Corp
- NY Albany
Qantel Corp
- NC Charlotte
Qantel Corporation
- OH Cincinnati
Qantel Corporation
- OH Strongsville
Qantel Corporation
- OR Salem
Qantel Corporation
- PA Montgomeryville
Qantel Corporation
- PA Pittsburgh
Qantel Corporation
- RI Providence
Qantel Corp
- TN Memphis
Qantel Corporation
- TX Amarillo
Qantel Corporation
- TX Dallas
Qantel Corporation
- TX Houston
Qantel Corporation
- UT Salt Lake City
Qantel Corporation
- WA Kirkland
Qantel Corporation
- WI Milwaukee
Qantel Corporation
- WI Schofield
Qantel Corporation
- QEI INC**
60 Fadam Rd
Springfield, NJ 07081
201-379-7400
Contact: Attn: VP Mktg
■ Products & Services
Multiplexers, frequency division
Modems, voice-grade, low-speed
Telecommunications monitor
Code converters
- Branch Sales Offices:
- TX Houston
QSS
123 N Point Dr
713-445-8055
- QUAD SYSTEMS INC**
11900 Parklawn Dr
Rockville, MD 20852
301-770-6788
Contact: Robert Karl
■ Products & Services
Front-end processors
Line sharing units
Minicomputers
Multiplexers, intelligent
Packet processors
Tape drives, magnetic
Digitized voice processors
Remote line printers
Computer/communications interfaces
Data compactor
Protocol converters
- QUESTRONICS INC**
3565 South West Temple 5
Salt Lake City, UT 84115
801-262-9923
Contact: Jerry Foote
■ Products & Services
Data content monitors
Protocol analyzers
Response-time monitors
- Branch Sales Offices:
- CA El Granada
D C M Assoc
Box 1192
415-726-6326
- CA Los Angeles
Ezra Mintz Assoc
8929 S Sepulveda Blvd
213-670-5410
- CO Littleton
Dapec Inc
5575 Sycamore
303-798-6538
- FL Satellite Beach
Reynolds & Assoc
476 North A1A
305-773-4700
- MD Rockville
Mesa Inc
11900 Parklawn Dr
301-881-8430
- MA Needham
Eastmark
10 Kearney Rd
617-449-0050

- NJ Cherry Hill
Datronix
20 Brace Rd
609-795-1141
- OH Toledo
Inter Computer Service
Box 393
419-666-2278
- TX El Paso
D B M Assoc
419 Balboa Rd
915-584-1795
- WA Bellevue
D P M Assoc
515 116 Av NE
206-453-9082
- BRITISH COLUMBIA, CANADA**
Vancouver
Infotron Systems Ltd
2653 W 3
604-738-4598
- QUME CORP**
2350 Qume Dr
San Jose, CA 95150
408-942-4000
Contact: John T Corser
■ Products & Services
Disc drives, floppy
Intelligent (programmable) terminals
Remote line printers
Branch Sales Offices:
- CA Santa Clara
QUME Corp
1400 Coleman Av
408-247-6990
- CA Torrance
QUME Corp
2501 237 St
213-326-7812
- IL Oak Brook
QUME Corp
2625 Butterfield Rd
312-323-2802
- NJ Upper Saddle River
QUME Corp
23 Industrial Ave
201-327-4244
- RACAL-MILGO**
8600 NW 41st St
Miami, FL 33166
305-592-8600
Contact: Richard Nathanson
■ Products & Services
Modem sharing units
Multiplexers, intelligent
Modems, limited distance
Modems, multipoint
Modems, multipoint
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
MIL 188C adapters
Network management centers
Tech control centers
Intelligent (programmable) terminals
Interactive systems
Remote job entry terminals
Teleprinters, impact
Video data terminals (KSR)
Video data terminals (RO)
Data security devices, encoder/decoders
Voice adapters
Data com. softw, intel. term. vendors
Maintenance organizations
Used equipment
Branch Sales Offices:
- CA Sherman Oaks
Racal-Milgo Information Systems
14755 Ventura Blvd
213-995-6167
- DC Washington
Racal-Milgo Information Systems
2020 K St NW
202-296-4940
- FL Miami
Racal-Milgo Intercontinental
8600 NW 41 St
305-592-7654
- GA Atlanta
Racal-Milgo Information Systems
Airport/285 Office Park Bldg 3
404-763-0304
- IL Des Plaines
Racal-Milgo Information Systems
2720 River Rd
312-298-7150
- NY New York
Racal-Milgo Information Systems
122 E 42 St
212-687-5040
- SC Greenville
Racal-Milgo Information Systems
25 Woods Lake Rd
803-233-1748
- BRITISH COLUMBIA, CANADA**
Vancouver
Electronetic Systems
1033 Davie St
604-687-5696
- ONTARIO, CANADA**
Downsview
Electronetic Systems
62 Alness St
416-661-3673
- ONTARIO, CANADA**
Ottawa
Electronetic Systems
34 Bentley Ave
613-226-1232
- QUEBEC, CANADA**
Montreal
Electronetic Systems
3 Place Villemarie
514-878-1168
- RACAL-VADIC INC**
222 Caspian Dr
Sunnyvale, CA 94086
408-744-0810
Advertising pages 54,55
Contact: Tom McShane
■ Products & Services
Line sharing units
Modem sharing units
Acoustic couplers
Modems, multipoint
Modems, multipoint
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Automatic calling units
Branch Sales Offices:
- AL Huntsville
Col-Ins-Co
Box 4028
800-327-6600
- AK Anchorage
Transalaska Data Systems
Box 10-665
907-344-1141
- AZ Scottsdale
Barnhill
7319 Stetson Dr
602-947-7841
- CA Anaheim
Moxon Electronics
1440 S State College Blvd
714-635-7600
- CA San Diego
Moxon Electronics
9580 Blackmountain Rd
714-578-5760
- CA Santa Clara
Moxon Electronics
2376 Walsh Rd
408-249-2491
- CO Denver
Barnhill
1980 S Quebec St
303-750-1222
- CT Wallingford
IMF Sales Assoc
200 Mansion Rd
203-265-0215
- FL Orlando
Col-Ins-Co
Box 13189
305-423-7615
- FL Largo
Col-Ins-Co
Box 91
800-432-4480
- FL Coral Springs
Col-Ins-Co
Box C7
800-432-4480
- FL Miami
Racal Milgo Inc
8600 NW 41 St
305-592-8600
- GA Clarkson
Col-Ins-Co
Box 559
800-327-6600
- IL Oakbrook Terrace
Racal-Vadic
18 W 100 22 St
312-396-8018
- IL Rolling Meadow
SEA Inc
1225 Carnegie St
312-255-4820
- IN Carmel
SEA Inc
614 B S Range Line Rd
317-846-2591
- KS Shawnee Mission
Inland Assoc
7975 W 63 St
913-362-2366
- MD Silver Spring
Terminal Networks
118 Eldrid Dr
301-662-3535
- MA Wakefield
IMF Sales Assoc
Lake Office Pk
617-245-8900
- MI Ann Arbor
ARC Electronics
2500 Packard Ave
313-973-1133
- MN Eden Prairie
Scientific Devices
7032 Willow Creek Rd
612-944-3515
- MO St Louis
Inland Assoc
13100 Manchester Rd
314-821-3742
- NJ Ridgewood
Instrumentation Sales
171 E Ridgewood Av
201-445-5210
- NJ Cherry Hill
Megargel Himmelstein
Av of Commerce, 2428 Rte 38
609-779-0200
- NM Albuquerque
Barnhill
1410 D Wyoming NE
505-299-7658

NY E Syracuse
Ossman Instruments
6666 Old Collamer Rd
315-437-6666

NY Rochester
Ossman Instruments
130 Allens Creek Rd
716-473-5720

NY Vestal
Ossman Instruments
300 Main St
607-785-9947

NC Winston-Salem
Col-Ins-Co
Box 11607
919-748-0297

OH Miamisburg
ARC Electronics
228 Byer Rd
513-433-1785

OH Rocky River
ARC Electronics
21360 Center Ridge Rd
216-333-0684

OR Portland
Rush Drake & Assoc
222 SW Harrison
503-224-3145

TX Houston
Barnhill
10606 Hempstead Hwy
713-688-9971

TX Austin
Barnhill
111 W Anderson Ln
512-451-0217

TX Richardson
Barnhill
1101 Executive Dr E
214-231-2573

UT Salt Lake City
Barnhill
54 W 2100 S
801-484-4496

WA Seattle
Rush Drake & Assoc
6133 6 Ave S
206-763-2755

*WI Waukesha
SEA Inc
2423 Pebblevalley Rd
414-547-6637

ONTARIO, CANADA
Rexdale
T E Fields Assoc
396 Attwell Dr
416-675-7500

ENGLAND
Reading
Racal Milgo Ltd
8600 NW 41 St

RADIAN CORP-UNITECH PRODUCTS

1005 E Saint Elmo Rd
Austin, TX 78745
512-444-0541
Contact: Frank Milstead
■ Products & Services
Batch terminals
Intelligent (programmable) terminals
Remote job entry terminals

Branch Sales Offices:

ENGLAND
London
Task Terminals Ltd
117 Cleveland St
01-637-4516

RAMTEK CORP
2211 Lawson Ln
Santa Clara, CA 95050
408-988-2211
Contact: Beverly Toms
■ Products & Services
Acoustic couplers
Graphic display terminals
Intelligent (programmable) terminals
Interactive systems

Branch Sales Offices:

AL Huntsville
Ramtek Corp
4717 University Av
205-837-7000
CA Newport Beach
Ramtek Corp
4570 Campus Dr
213-979-5351
FL Maitland
Ramtek Corp
235 S Maitland Ave
305-645-0780
IL Arlington Heights
Ramtek Corp
515 E Golf Rd
312-956-8265
MD Bethesda
Ramtek Corp
7979 Old Georgetown Rd
301-656-0350
MA Lexington
Ramtek Corp
2 Militia Dr
617-862-7720
NJ E Brunswick
Ramtek Corp
275 Route 18
201-238-2090
OH Pepper Pike
Ramtek Corp
29425 Chagrin Blvd
216-464-4053
TX Plano
Ramtek Corp
520 Central Pkwy
214-422-2200

RAPICOM INC
2175 Augustine Dr
Santa Clara, CA 95051
408-946-2493
Contact: David L Niermeyer
■ Products & Services
Facsimile terminals
Data compactor

Branch Sales Offices:

CA Long Beach
Rapicom Inc
406 Oceangate
213-436-3254
DC Washington
Rapicom Inc
1611 N Kent St
703-527-6561
GA Atlanta
Rapicom Inc
35 Executive Park Dr NE
404-634-4292
IL Hillsdale
Rapicom Inc
4415 W Harrison St
312-449-8113
MA Boston
Rapicom Inc
1616 Soldiers Field Rd
617-782-1581
MI Troy
Rapicom Inc
500 Stephenson Hwy
313-585-0451

MO Clayton
Rapicom Inc
7710 Carondelet Av
314-725-5004

NY New York
Rapicom Inc
1114 Av of Americas
212-869-1930

OH Shaker Heights
Rapicom Inc
3645 Warrensville Ctr Rd
216-921-6242

PA Pittsburgh
Rapicom Inc
601 Grant St
412-281-2208

TX Houston
Rapicom Inc
2000 North Loop W
713-462-7553

TX Dallas
Rapicom Inc
6350 LBJ Fwy
214-661-3826

WA Seattle
Rapicom Inc
1200 112th Av NE
206-453-8749

ONTARIO, CANADA
Ottawa
Rapicom Inc
181 Bank St
613-236-7055

JAPAN
Tokyo
Ricoh Co Ltd
1-15-5 Minami-Aoyama
813-479-3111

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

RAYTHEON DATA SYSTEMS

360 Forbes Blvd
Mansfield, MA 02048
617-339-5731
Contact: William Karavatos
■ Products & Services
Concentrators
Message switchers
Minicomputers
Modem sharing units
Packet processors
Remote network processors
DDP systems
Intelligent (programmable) terminals
Interactive systems
Remote job entry terminals
Video data terminals (KSR)
Word processors, communicating
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.
Data com. softw, intel. term. vendors
Lease and resale organizations

Branch Sales Offices:

CA Irvine
Raytheon Data Systems
1692 Browning Ave
714-979-5800
CA Santa Clara
Raytheon Data Systems
3255-4B Scott Blvd
408-249-0163
CA Sacramento
Raytheon Data Systems
1540 River Pk Dr
916-920-1740

CO Denver
Raytheon Data Systems
4755 Paris St
303-371-0990

CT Hartford
Raytheon Data Systems
111 Founders Plaza
203-289-8281

FL Miami
Raytheon Data Systems
8675 Kroger Exec Ctr Dr
305-592-3884

GA Atlanta
Raytheon Data Systems
1925 Century Blvd
404-321-3064

IL Des Plaines
Raytheon Data Systems
1111 E Touhy Ave
312-694-4420

KS Kansas City
Raytheon Data Systems
3100 Broadway
816-561-9333

MA Wellesley
Raytheon Data Systems
45 William St
617-237-4190

MA Mansfield
Raytheon Data Systems; Mini Comm
Div
360 Forbes Blvd
617-339-5731

MI Detroit
Raytheon Data Systems
24133 Northwestern Hwy
313-358-3990

MN Minneapolis
Raytheon Data Systems
7801 Metro Pkwy
612-854-2666

MO St Louis
Raytheon Data Systems
111 W Port Plaza
314-576-4433

NJ E Orange
Raytheon Data Systems
64 Evergreen Pl
201-678-4965

NJ Pennsauken
Raytheon Data Systems
Cooper Pkwy Plaza
609-665-8466

NY Albany
Raytheon Data Systems
80 Wolf Rd
518-458-7434

NY New York
Raytheon Data Systems
489 5 Ave
212-661-2790

NY Lake Success
Raytheon Data Systems
3000 Marcus Ave
212-895-2567

NC Greensboro
Raytheon Data Systems
2301 West Meadowview Rd
919-294-5811

OH Cleveland
Raytheon Data Systems
26300 Euclid Ave
216-731-1191

OK Tulsa
Raytheon Data Systems
6111 E Skelly Dr
918-663-7853

PA Pittsburgh
Raytheon Data Systems
5 & Wood
412-281-2117

TX Dallas
Raytheon Data Systems
13500 Midway Rd
214-661-9722

TX Houston
Raytheon Data Systems
14825 St Mary's La
713-496-0100

VA Arlington
Raytheon Data Systems
400 Army-Navy Dr
703-979-6100

WA Seattle
Raytheon Data Systems
555 116 Ave NE
206-453-0650

RAYTHEON SERVICE CO
2 Wayside Rd
Burlington, MA 01451
617-272-9300
Contact: Ray Becker
■ Products & Services
Maintenance organizations
Timesharing/service bureaus

Branch Sales Offices:

CA Santa Ana
Raytheon Service Co
2720 Croddy Way
714-540-8935

CA Mountain View
Raytheon Service Co
350 Ellis St
415-968-9211

GA Norcross
Raytheon Service Co
6177 Peachtree Corners W
404-448-2428

IL Addison
Raytheon Service Co
220 E Lake St
312-834-3713

TX Dallas
Raytheon Service Co
4220 Proton St
214-661-8795

VA Alexandria
Raytheon Service Co
716D Church St
703-836-0550

RCA AMERICAN COMMUNICATIONS INC

201 Centennial Av
Piscataway, NJ 08854
201-885-4400
Advertising page 17
Contact: John Williamson
■ Products & Services
Satellite carriers

Branch Sales Offices:

CA San Francisco
RCA Americom
One Market Plaza
415-546-2130

CA Los Angeles
RCA Americom
624 S Grand Av
213-485-8761

IL Chicago
RCA Americom
Two N Riverside
312-648-0600

NY New York
RCA Americom
1133 Ave of Americas
212-248-2631

TX Houston
RCA Americom
2200 N Loop W
713-680-8903

RCA GLOBAL COMMUNICATIONS INC

60 Broad St
New York, NY 10004
212-248-2121
Contact: Ed Yeaker
■ Products & Services
Facsimile-service carriers
International record carriers
Message (including telegraph) carriers
Packet-switching carriers
Telephone companies
Concentrators
Front-end processors
Line sharing units
Message switchers
Minicomputers
Multiplexers, frequency division
Multiplexers, time division
Multiplexers, intelligent
Multiplexers, group band
Port sharing units
Modems, multipoint
Modems, multipoint
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Network management centers
Tech control centers
Telecommunications monitor
Graphic display terminals
Teletypewriters
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)
Automatic answering units
Automatic calling units
Computer/communications interfaces
Furniture, cabinets, terminal enclosures
Paper for terminals
Ribbons and supplies for terminals and
printers
Switches, data communications, automatic
Switches, data communications, manual
Data communications consultants
Maintenance organizations

Branch Sales Offices:

CA Santa Ana
RCA Global Comm Inc
1420 E Edinger
714-558-2492

CA Los Angeles
RCA Global Comm Inc
624 S Grand Ave
213-629-3200

CA San Francisco
RCA Global Comm Inc
One Market Plaza
415-546-2100

CO Englewood
RCA Global Comm Inc
5680 S Syracuse Cir
303-770-0327

CT West Hartford
RCA Global Comm Inc
854 Farmington Ave
203-561-0102

DC Washington
RCA Global Comm Inc
2030 M St NW
202-862-8233

FL Miami
RCA Global Comm Inc
1515 NW 167 St
305-621-4000

GA Atlanta
RCA Global Comm Inc
3395 Northeast Expwy
404-455-8686

HI Honolulu
RCA Global Comm Inc
Box 2295

IL Arlington Heights
RCA Global Comm Inc
1650 N Arlington Heights Rd
910-687-0369

LA New Orleans
RCA Global Comm Inc
2 Canal St
504-586-0485

MA Wakefield
RCA Global Comm Inc
North Ave
617-246-0102

MI Oak Park
RCA Global Comm Inc
21700 Greenfield Rd
313-968-2223

MN Bloomington
RCA Global Comm Inc
2850 Metro Dr
612-854-4021

MO Kirkwood
RCA Global Comm Inc
123 W Clinton Pl
314-821-2182

NJ Piscataway
RCA Global Comm Inc
201 Centennial Ave
201-885-4102

NY Deer Park
RCA Global Comm Inc
Box 54
516-586-4509

NY Fairport
RCA Global Comm Inc
145 Perinton Hills Office Pk
716-223-8925

OH Cincinnati
RCA Global Comm Inc
4050 Executive Park Dr
513-769-5110

OH Cleveland
RCA Global Comm Inc
26250 Euclid Ave
216-261-0137

OR Portland
RCA Global Comm Inc
600 SW 10 Ave
503-224-5830

PA Morrisville
RCA Global Comm Inc
364 W Trenton Ave
215-547-0700

PA Pittsburgh
RCA Global Comm Inc
3471 Babcock Blvd
412-366-7966

TX Dallas
RCA Global Comm Inc
4825 LBJ Frwy
214-387-4470

TX Houston
RCA Global Comm Inc
4615 Southwest Frwy
713-965-0800

WA Seattle
RCA Global Comm Inc
1306 Park Place Bldg
206-622-6190

PR Old San Juan
RCA Global Comm Inc
Box 3388

ARGENTINA Buenos Aires
RCA Global Comm Inc
Tucuman 425-2 C

AUSTRALIA Sydney
RCA Global Comm Inc
175 Pitt St
232-6350

BELGIUM Brussels
RCA Global Comm Inc
4 Rue Gaucheret
218.41.21

BRAZIL Rio de Janeiro
RCA Global Comm Inc
Avenida Presidente Vargas 962
S/807
223-8912

CHILE Santiago
RCA Global Comm Inc
Moneda 920
72 42 07

COLOMBIA Bogota
RCA Global Comm Inc
Carrera 10 22-65
82.74.47

DOMINICAN REPUBLIC Santo Domingo
RCA Global Comm Inc
Calle El Conde 203-1

EGYPT (UAR) Dokki
Fiani & Partners
143 Tahrir St
985765

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

ENGLAND London
RCA Global Comm Inc
50 Curzon St
01-499-4100

FRANCE Paris
RCA Global Comm Inc
5 Rue Drouot
824-6363

GERMANY, WEST Frankfurt
RCA Global Comm Inc
45 Mittelweg
611-591445

GREECE Athens
RCA Global Comm Inc
Panepistimiou 59
32 44 244

GUAM Agana
RCA Global Comm Inc
ADA Plaza Center; Box EH

GUATEMALA Guatemala City
RCA Global Comm Inc
6-A Ave; 11-43 Zona 1
24 7 09

HAITI Port-au-Prince
RCA Global Comm Inc
Box 153-A Maison Leger

INDIA Bombay
International Representative-K
Balchandani
120 Wode House Rd
212484

INDONESIA Jakarta-Barat
NVPD Soedarpo Corp
J1 Letjen; S Parman Kav
591594

IRAN Tehran
RCA Globcom Systems Inc
Abbas Abbad Ave
851776

ITALY Rome
RCA Global Comm Inc
Via Ostiense 81/A
57 42 147

JAPAN Tokyo
RCA Global Comm Inc
Nishi-Shinjuku 2-chome
347-7843

JORDAN Amman
International Representative-M
Farr
Box 3402
42462

KOREA REP (REP) Seoul
RCA Global Comm Inc
1-KA Myung-Dong
28-0485

LEBANON Beirut
International Representative-G
Khouri
JF Kennedy St-Flat 1
366-483

MOROCCO Casablanca
International Representative-A
Masbah
143 Blvd Zeraoui
261082

NETHERLANDS ANTILLES Curacao
RCA Global Comm Inc
Theaterstraat 17-Rm 29
36272

PAKISTAN Karachi
RCA Global Comm Inc
Box 2130
612419

PANAMA Panama City
Sistelcom
Av Mexico Y Av Ecuador
255023

PERU Lima
RCA Global Comm Inc
Av Corpac 290 Of 52
41.21.85

SINGAPORE Singapore
RCA Global Comm Inc
230-236 Orchard Rd
2353444

SPAIN Madrid
RCA Global Comm Inc
C/Avda Del Brasil 17
455-5041

SWITZERLAND Lausanne
RCA Global Comm Inc
Rue Charles Monnard 1
22-71-54

TAIWAN Taipei
RCA Global Comm Inc
162 Hsin Yi Rd
7079746

TURKEY

Istanbul
Istiklal Caddesi
Sinem Sary 108
442672

VENEZUELA

Caracas
RCA Global Comm Inc
Avenida Libertador Con Venezuela
339839

RCA GLOBCOM SYSTEMS INC
AUTHORIZED RESALE COMMON
CARRIER

60 Broad St
New York, NY 10004
212-248-7454

Contact: K E Ryan

■ Products & Services

Value-added carriers

Lease and resale organizations

Branch Sales Offices:

CA San Francisco
RCA Globcom Systems Inc
One Market Plaza
415-546-2190

CA Los Angeles
RCA Globcom Systems Inc
1313 W Eighth St

IL Chicago
RCA Globcom Systems Inc
2 N Riverside Plaza
312-454-1533

RCA SERVICE CO

DATA SERVICES

Rt 38

Cherry Hill, NJ 08358

609-338-4170

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■ Products & Services

Intelligent (programmable) terminals

Teletypewriters, impact

Lease and resale organizations

RECEPTORS INC

4203 Spencer St
Torrance, CA 90503
213-542-0501

Contact: Attn: VP Mktg

RECOGNITION EQUIPMENT INC

PO Box 222307
Dallas, TX 75222
214-438-8611

Contact: Jay R Reese

■ Products & Services

DDP systems

Bar code readers

Data entry terminals, portable

Branch Sales Offices:

AZ Scottsdale
Recognition Equipment
2629 N Scottsdale Rd
602-947-7316

CA Los Angeles
Recognition Equipment
3450 Wilshire Blvd
213-380-2184

CA San Francisco
Recognition Equipment
350 Sansome St
415-421-1711

GA Atlanta
Recognition Equipment
3300 Buckeye
404-451-7491

IL Schiller Park
Recognition Equipment
4825 North Scott St
312-671-2900

KS Overland Park
Recognition Equipment
10100 Santa Fe
913-649-9595

MA Sherborn
Recognition Equipment
7 N Main St
617-655-7635

MI Ann Arbor
Recognition Products
3861 Research Park Dr
313-668-1644

NJ Collingswood
Recognition Equipment
434 Haddon Ave
609-858-5165

NY New York
Recognition Equipment
201 East 42 St
212-557-0840

OH North Olmsted
Recognition Equipment
26777 Lorain Rd
216-777-3131

OK Tulsa
Recognition Equipment
9717 E 42 St
918-663-6662

TX Houston
Recognition Equipment
8550 Katy Frwy
713-464-4931

VA Alexandria
Recognition Equipment
300 North Lee St
703-548-4114

ONTARIO, CANADA

Markham
Recognition Equipment (Canada)
Ltd
315 Steelcase Rd
416-495-0600

ENGLAND

Slough, Berkshire
Recognition Equipment Ltd
442 Bath Rd
44-06286-62516

FRANCE

Paris
Recognition Equipment France SA
311 rue LeCourbe
1-531.53.49

GERMANY, WEST

Frankfurt
Recognition Equipment GmbH
6050 Offenbach/Main
611-88.60.01-2-3

ITALY

Roma
Recognition Equipment Italia SpA
Via Isonzo 34
396-844.82.58-290

JAPAN

Tokyo
Recognition Equipment Japan
6 Kowa Bldg; 4-chome
Mishi-Azabu, Minato-Ku
407-6011-2-3-4

NETHERLANDS

Amsterdam
Recognition Equipment Nederland
NV
Buikslotermeerplein 127 A
20-32.78.77

SWEDEN

Stockholm
AB Recognition Equipment
Industri
Tulegatan 39
468-15.14.50

RENTAL ELECTRONICS INC

2445 Faber Pl
Palo Alto, CA 94303
415-856-7600

Contact: Sandra Gilmore

■ Products & Services

Acoustic couplers

Data content monitors

Protocol analyzers

Response-time monitors

Disc drives, floppy

Tape punch/reader, paper

Data entry terminals, portable

Digital plotters

Graphic display terminals

Intelligent (programmable) terminals

Remote line printers

Video data terminals (KSR)

Video data terminals (RO)

Lease and resale organizations

Branch Sales Offices:

CA Fullerton
Rental Electronics Inc
597 S State College Blvd
714-879-0561

CA Mountain View
Rental Electronics Inc
2450 Charleston Rd
415-968-8845

CA Northridge
Rental Electronics Inc
19527 Business Centre Dr
213-993-7368

FL Ft Lauderdale
Rental Electronics Inc
4808 NE 10 Ave
305-771-3500

IL Des Plaines
Rental Electronics Inc
1273 N Rand Rd
312-827-6670

MD Gaithersburg
Rental Electronics Inc
16600 Oakmont Ave
301-948-0620

MA Burlington
Rental Electronics Inc
One North Ave
617-273-2770

NJ Wyckoff
Rental Electronics Inc
681C Lawlins Rd
201-891-8500

TX Dallas
Rental Electronics Inc
4402 Sunbelt Dr
214-661-8082

BRITISH COLUMBIA, CANADA

Richmond
Rental Electronics Inc
10691 Shellbridge Way
604-278-8458

ONTARIO, CANADA

Rexdale
Rental Electronics Inc
50 Galaxy Blvd
416-675-7513

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

RFL INDUSTRIES INC

Powerville Rd
Boonton, NJ 07005
201-334-3100

Contact: Attn: VP Mktg

■ Products & Services

Multiplexers, frequency division

Modems, voice-grade, low-speed

Modems, voice-grade, medium speed
Branch Sales Offices:

- AZ Sun City
Luscombe Engineering
13640 Kaana Palo Point
602-947-6566
- CA Pasadena
Luscombe Engineering Co
99 S Chester Av
213-684-2000
- CA Novato
Tarbell Assoc
Box 1595
415-897-7544
- CO Arvada
Claredon Co
8141 W I-70 Frontage Rd N
303-424-2010
- DC Washington
Instrucom Inc
1629 K St NW/Ste 500
202-223-1759
- FL St Petersburg
Commack Corp
Box 20023
813-577-0400
- HI Honolulu
Clemco Pacific
2929 Ualena St
808-845-2211
- IL Roselle
Ray Rosenkoetter Assoc
Box 312
312-529-3300
- MN Minneapolis
Robert W Marshall Co Inc
6106 Excelsior Blvd
612-929-0457
- MO Cameron
Comm Systems Assoc
520 W 5th St
816-632-7616
- NH Keene
RFL Industries Inc
44 Dickinson Rd
603-352-6710
- NY Lynbrook
Puleo Electronics Inc
39 Hutcheson Pl
516-599-4875
- OH Columbus
RFL Industries Inc
1780 White Pine Ct
614-888-7255
- OR Tigard
Instrumentation/Control Systems
Inc
Box 23845
503-643-1631
- TX Houston
RFL Industries Inc
12315 Woodthorpe
713-464-1178

RIANDA ELECTRONICS LTD

- 2535 Via Palma
Anaheim, CA 92801
714-995-6552
Contact: Dick McCormick
■ Products & Services
Add-on main memory
Cartridge drives
Disc drives, large
Tape drives, magnetic
Tape punch/reader, paper
- Branch Sales Offices:
- CA Anaheim
Moxon Electronics
1440 S State College
714-635-7600

- CO Denver
PAR Assoc
3333 Quebec St
303-355-2363
- FL Orlando
FM Assoc
5018 Mortier Av
305-851-5716
- MD Rockville
TE Corp
701 E Gude Dr
301-340-0303
- MA Wakefield
Instrument Dynamics
Lakeside Office Park
617-245-5100
- MI Lansing
Bexdata
2533-A2 Bernice Rd
312-895-3010
- NJ Hohokus
Hansen Assoc
215 Brookside Av
201-652-7055
- NM Albuquerque
PAR Assoc South
2403 San Mateo NE
505-881-5000
- PA King of Prussia
Rivco-January
649 S Henderson Rd
215-265-5211
- TX Dallas
Remtek
13500 Midway Rd
214-387-2855

RIXON INC

- 2120 Ind Parkway
Silver Spring, MD 20904
301-622-2121
Advertising page 53
Contact: Ed Felker
■ Products & Services
Line sharing units
Modem sharing units
Multiplexers, time division
Multiplexers, intelligent
Channel service units
Modems, limited distance
Modems, multipoint
Modems, multipoint
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Tech control centers
Automatic calling units
Furniture, cabinets, terminal enclosures
Switches, data communications, manual
Voice adapters

Branch Sales Offices:

- CA Garden Grove
Rixon Inc
7271 Garden Grove Blvd
714-898-7737
- CO Denver
Rixon Inc
1582 S Parker Rd
303-750-3682
- CT Bridgeport
Rixon Inc
2266 E Main St
203-334-3414
- GA Marietta
Rixon Inc
1319 Johnson Ferry Rd
404-977-1375
- IL Downers Grove
Rixon Inc
1501 Ogden Av
312-852-3226

- MO Kansas City
Rixon Inc
4420 Madison Av
816-531-4411
- OH Dayton
Rixon Inc
5757 Far Hills Av
513-435-1948
- PA Bryn Mawr
Rixon Inc
1049 Lancaster Ave
215-525-2663
- TX Houston
Rixon Inc
6001 Gulf Frwy
713-923-5529
- ONTARIO, CANADA
Ottawa
Rixon/Sangamo
2675 Blackwell St
613-741-1231

ROBINS INDUSTRIES CORP

- 75 Austin Blvd
Commack, NY 11725
516-543-5200
Contact: Samuel Jones
■ Products & Services
Tape, paper
Error Controllers

ROCKWELL-COLLINS

- PO Box 10462
Dallas, TX 75207
214-996-2336
Contact: R W Corcoran
■ Products & Services
Concentrators
Front-end processors
Message switchers
Minicomputers
Remote network processors
Network management centers
Switches, data communications, automatic
Data com. softw, comms processor vend.

Branch Sales Offices:

- CA Newport Beach
Collins Comm Switching Sys
4311 Jamboree Rd
714-833-4645
- GA Atlanta
Collins Comm Switching Sys
1591 Phoenix Blvd
404-996-7112
- IL Des Plaines
Collins Comm Switching Sys
3150 Des Plaines Av
312-298-5177
- NY New York
Collins Comm Switching Sys
200 Park Av
212-661-6530
- VA Arlington
Collins Comm Switching Sys
1745 Jefferson Davis Hwy
703-685-2670
- WA Renton
Collins Comm Switching Sys
15 S Grady Way

**ROCKWELL INTERNATIONAL
MICRO ELECTRONICS**

- Box 3669
Anaheim, CA 92803
714-632-5535
Contact: Norman S Maxwell
■ Products & Services
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed

Branch Sales Offices:

CA Anaheim
 Rockwell Int'l
 Box 3669
 714-632-3698
IL Des Plaines
 Rockwell Int'l
 1011 E Touhy
 312-297-8862
NJ N Brunswick
 Rockwell Int'l
 850-870 US Rt 1
 201-246-3630
GERMANY, WEST
 Munchen-Martinsried
 Rockwell Int'l GmbH
 Fraunhoferstrasse 11
 089-859-9575
JAPAN
 Chiyoda-Ku
 Rockwell Int'l Overseas
 Itohira Hiraoka Bldg
 03-265-8806
ROLM CORP
 4900 Old Ironsides Dr
 Santa Clara, CA 95050
 408-988-2900
 Contact: Tony Seidel
 ■ Products & Services
 Computerized branch exchange (CBX)
 Disc drives, floppy
Branch Sales Offices:
AK Anchorage
 Wire Communications Inc
 4134 Ingra St
 907-278-2541
AZ Phoenix
 Communications Consultants Inc
 3914 E McDowell Rd
 602-244-9861
AZ Tucson
 Communications Consultants Inc
 3040 N Country Club Rd
 602-881-0885
AR Little Rock
 Fisk Telephone Systems Inc
 7501 Interstate 30
 501-568-2144
CA Anaheim
 Compah
 700 N Valley St
 714-533-2880
CA Fresno
 Compah
 4249 W Shaw
 209-486-3403
CA Modesto
 Compah
 142 N 4 St
 209-577-0610
CA North Hollywood
 Compah
 8125 Lankershim Blvd
 213-768-6761
CA Oakland
 Compah
 2150 Franklin St
 415-465-2950
CA Sacramento
 Compah
 1787 Tribute Rd
 916-920-1174
CA San Diego
 Compah
 7870 Clairemont Blvd
 714-565-1176
CA San Francisco
 Compah
 230 California St
 415-781-3801

CA Sunnyvale
 Compah
 536 Weddell Dr
 408-734-5130
CO Colorado Springs
 United Business Systems Inc
 1516 Dusty Dr
 303-576-0111
CO Denver
 United Business Systems Inc
 229 Vallejo
 303-778-8755
CO Fort Collins
 United Business Systems Inc
 2040 Airway Ave
 303-221-5595
CT Wallingford
 ROLM/New England
 Barnes Industrial Park
 203-265-7858
DE
 Philadelphia Telephone Co
 800-523-8704
FL Jacksonville
 First Communications Corp
 2622 University Blvd W
 904-731-7218
FL Miami
 First Communications Corp
 16101 NW 57 Ave
 305-463-9510
FL Orlando
 First Communications Corp
 7649 Currency Dr
 305-859-8333
FL Tallahassee
 First Communications Corp
 1519 Capital Cir NE 7
 904-878-2105
FL Tampa
 First Communications Corp
 1212 N 39 St
 813-247-3101
GA Atlanta
 Jarvis Inc
 1750 Peachtree St NE
 404-873-2471
IL Chicago
 ROLM/Illinois
 1 E Wacker Dr
 312-644-1140
IL Rosemont
 ROLM/Illinois
 9757 W Farragut
 312-678-5570
IN Elkhart
 KLF Electronics
 26586 Windsor Ave
 219-293-4114
IN Fort Wayne
 KLF Electronics
 2833 S Calhoun
 219-745-0573
IN Indianapolis
 KLF Electronics
 6207 Coffman Rd
 317-299-4750
KS Overland Park
 Telecommunication Services Inc
 11306 W 89 St
 913-492-5800
LA Metairie
 Fisk Telephone Systems Inc
 217617 Edenborn Ave
 504-889-0816
LA Baton Rouge
 Fisk Telephone Systems Inc
 1360 Main St
 504-383-7894

MD Hanover
 Jarvis Inc
 7170 Standard Dr
 301-796-7171
MA Watertown
 ROLM/New England
 80 Coolidge Hill Rd
 617-926-1300
MA Springfield
 ROLM/New England
 93 A Mill Park
 413-737-2652
MA Worcester
 ROLM/New England
 332 Main St
 617-756-0455
MI Southfield
 ROLM/Michigan
 21238 Bridge St
 313-353-4550
MN Plymouth
 Norstan Communication Systems
 15755 32 Ave N
 612-553-3200
MO St Louis
 Telecommunication Services Inc
 1155 N Warson Rd
 314-997-4660
NE Omaha
 Norstan Communication Systems
 14920 Grover St
 402-334-8710
NV Las Vegas
 Las Vegas Communications
 3373 Wynn Rd
 702-873-4555
NJ Union
 United Telecommunications Corp
 1767 Morris Ave
 201-964-6262
NM Albuquerque
 Communication Consultants of NM
 Inc
 2806 Candelaria Rd
 505-345-9975
NY Hicksville
 United Telecommunications Corp
 550 Old Country Rd
 516-822-1971
NY Latham
 United Telecommunications Corp
 Plaza 7
 518-783-0222
NY New York City
 United Telecommunications Corp
 245 Park Ave
 212-687-8338
NY Rochester
 United Telecommunications Corp
 1255 University Ave
 716-244-3169
NY Spring Valley
 United Telecommunications Corp
 52 S Main St
 914-356-2410
NY Syracuse
 United Telecommunications Corp
 5 Adler Dr
 315-437-1689
NY Tonawanda
 United Telecommunications Corp
 425 Fillmore Ave
 716-694-2317
NY Vestal
 United Telecommunications Corp
 1911 Vestal Pkwy
 607-754-2791
NC Greensboro
 Telarent Leasing Corp
 2922 Baltic Ave
 919-275-5021

NC Raleigh
Telertent Leasing Corp
4209 Fayetteville Rd
919-772-8600

OH Akron
Electronic Engineering Co
362 W Bowery St
216-762-9771

OH Cincinnati
Electronic Engineering Co
11260 Sebring Dr
513-851-8100

OH Cleveland
Electronic Engineering Co
360 Alpha Park
216-473-0400

OH Columbus
Electronic Engineering Co
6550 Singletree Dr
614-846-0990

OK Oklahoma City
Fisk Telephone Systems
4020 N Stiles
405-521-0096

OK Tulsa
Fisk Telephone Systems
5426 S 94 E Ave
918-663-7680

OR Portland
American Business Communications
13865 NW Cornell Rd
503-645-4402

OR Eugene
American Business Communications
211 Oakway Mall
503-484-6366

PA Verona
Pittsburgh Telephone Co
6149 Saltsburg Rd
412-765-6800

PA Camp Hill
Philadelphia Telephone Co
209 Senate Ave
717-763-1194

PA Cornwell Heights
Philadelphia Telephone Co
3580 Progress Dr
215-245-7000

TN Nashville
General Communications & Elect
631 Mainstream Dr
615-244-7656

TX Amarillo
Fisk Telephone Systems
800 Rusk St
806-374-0737

TX Austin
Fisk Telephone Systems Inc
5501 N Lamar
512-451-0268

TX Dallas
Fisk Telephone Systems Inc
4639 Irving Blvd
214-634-1581

TX Fort Worth
Fisk Telephone Systems Inc
707 N Freeway
817-332-3861

TX Houston
Fisk Telephone Systems Inc
3102 Milam St
713-523-8101

TX San Antonio
Fisk Telephone Systems Inc
8846 Tradeway
512-828-9021

UT Utah
Salt Lake Telephone Co
3007 SW Temple
801-486-5151

VA Annandale
Rolm Corp
7700 Little River Tpk
703-750-0300

VA Richmond
Jarvis Inc
2100 Dabney Rd
804-355-3221

VA Virginia Beach
Jarvis Inc
5477 Greenwich Blvd
804-490-0131

WA Bellevue
Interconnect Northwest
13425 NE 20 St
206-641-3950

WI Milwaukee
Norstan Communication Systems
9426 W Carmen Ave
414-527-1910

PR Santurce
Comtronics Inc
430 Calma St
809-727-4646

If you know the name of the product and want to know who makes it, turn to **Products & Services Directory, page 8.**

ROYAL BUSINESS MACHINES INC

150 New Park Ave
Hartford, CT 06106
203-523-4881
Contact: Cy Tyler
■ Products & Services
Cartridge drives
Disc drives, floppy
Disc drives, large
Intelligent (programmable) terminals
Interactive systems
Remote line printers

Branch Sales Offices:

CA Carson
Royal Business Machines Inc
20500 S Belshaw
213-537-9400

IL Rolling Meadows
Royal Business Machines Inc
1825 Hicks Rd
312-991-9620

RUSCO ELECTRONIC SYSTEMS

1840 Victory Blvd
Glendale, CA 91201
213-240-2540
Contact: Mike Sanders
■ Products & Services
Badge readers
Data security devices, personal ident. sys.
Used equipment

Branch Sales Offices:

CA Palo Alto
Rusco Electronic Systems
1804 Embarcadero Rd
415-858-1000

CA Los Angeles
Rusco Electronic Systems
6055 E Washington Blvd
213-725-1411

CA San Diego
Rusco Electronic Systems
5333 Mission Cntr Rd
714-297-5173

CO Denver
Rusco Electronic Systems
6000 E Evans
303-758-9233

FL Tampa
Rusco Electronic Systems
2625 E 4 Ave
813-248-4955

GA Atlanta
Rusco Electronic Systems
1900 Century Blvd
404-325-1025

IL Elmhurst
Rusco Electronic Systems
188 Industrial Dr
312-833-0720

MA Foxboro
Rusco Electronic Systems
38 Mechanic St
617-543-4891

MI Farmington Hills
Rusco Electronic Systems
32969 Hamilton Court
313-553-9320

MN Burnsville
Rusco Electronic Systems
201 W Burnsville
612-894-8040

MO St Louis
Rusco Electronic Systems
2031 Oliver St
314-231-8622

NJ Hackensack
Rusco Electronic Systems
401 Hackensack Av
201-343-7100

OH Cincinnati
Rusco Electronic Systems
230 Northland Blvd
513-771-6297

PA Philadelphia
Rusco Electronic Systems
8040 Roosevelt Blvd
215-331-5313

TX Richardson
Rusco Electronic Systems
324 N Central Expressway
214-690-3640

TX Houston
Rusco Electronic Systems
6330 Gulfport St
713-777-5254

VA McLean
Rusco Electronic Systems
6723 Whittier Av
703-821-3763

WA Seattle
Rusco Electronic Systems
331 Andover Park E
206-575-1350

SABER LABORATORIES INC

1150 Bryant St
San Francisco, CA 94111
415-431-4707
Contact: Leo Jones
■ Products & Services
Data security devices, encoder/decoders

SAI TECHNOLOGY CO

4060 Sorrento Valley Blvd
San Diego, CA 92121
714-452-9150
Contact: W J McCreary
■ Products & Services
Graphic display terminals
Intelligent (programmable) terminals
Interactive systems

Branch Sales Offices:

FL Orlando
Eltruex Assoc
4864 S Orange Av
305-859-2160

MN Wayzata
Dorwart Peripherals
250 N Central
612-473-9242
NY Northport
Data Logic Sales Inc
16 Juliet La
516-757-3330

SALES DEVELOPMENT ASSOCIATES

148 Linden St; Suite 306
Wellesley, MA 02181
617-237-5860
Contact: Steven M Stroum
■ Products & Services
Data communications consultants

SANDERS TECHNOLOGY

Box 1226
Nashua, NH 03061
603-882-1000
Contact: Ron Shugan
■ Products & Services
Teletypewriters, impact
Branch Sales Off.ces:
CA Fountain Valley
MQI Computer Products
18381 Bandilier Cir
714-964-4722
FL Orlando
Gentry Assoc Inc
550 N Bumby Ave
305-894-4401
IL Northbrook
Marketch/Kaltronics
3677 Woodhead Dr
312-291-1220
MD Rockville
Mesa Inc
11900 Parklawn Dr
301-881-8430
MA Lowell
S & S Electronics
80 Stedman St
617-459-2578
MO Grandview
Digital Systems Sales Inc
4006 E 137 Ter
816-765-3337
NM Albuquerque
PAR Assoc
2610 San Mateo NE
505-881-5000
NY Plainview
Trac Assoc Marketing Inc
88 Sunnyside Blvd
516-938-7664
OH Chagrin Falls
W C Koepf Assoc
68 Olive St
216-247-5129
PA Ambler
Denco Data Equipment Co
25 Skippack Pike
215-542-9876
TX Houston
Comspec Inc
10000 Old Katy Rd
713-461-4248
WA Kirkland
Data Systems Marketing
137½ Commercial Ave 2
206-827-0402

SATELLITE BUSINESS SYSTEMS

8003 Westpark Dr
McLean, VA 22102
703-827-2000
Contact: Lawrence Weekly
■ Products & Services
Satellite carriers

Branch Sales Offices:

CT Stamford
Satellite Business Systems
2777 Summer St
203-348-3300
VA Reston
Satellite Business Systems
11410 Isaac Newton Sq
703-471-6720

SCAN-DATA CORP

800 E Main St
Norristown, PA 19401
215-277-0500
Contact: Richard C Thompson
■ Products & Services
DDP systems
Batch terminals
Intelligent (programmable) terminals
Remote job entry terminals
Data com. softw, distr. dp systems vend.
Maintenance organizations

Branch Sales Offices:

CA Paramount
Scan-Data Corp
7547 Jackson St
213-636-2441
IL Hillside
Scan-Data Corp
4415 W Harrison St
312-449-1020
MD Rockville
Scan-Data Corp
6011 Execypte Blvd; Box 3
301-881-5950
NY New York
Scan-Data Corp
250 W 34th St
212-239-4466

ENGLAND

Middlesex
OCR Scan-Data Ltd
2 Holly Rd, Twickenham
01-891-0156

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

SCHLAGE ELECTRONICS

1135 E Arquies Ave
Sunnyvale, CA 94086
408-736-8430
Contact: Rob Driscoll
■ Products & Services
Badge readers
Data security devices, personal ident. sys.

SCIENTIFIC-ATLANTA INC

SATCOM DIVISION

3845 Pleasantdale Rd
Atlanta, GA 30340
404-449-2000
Contact: John Feight
■ Products & Services
Earth stations
Modems, wideband, group band
Modems, wideband, super-group band
Select. & transfer equip., monitor & test
switch. equip.
Switches, data communications, automatic

Branch Sales Offices:

CA San Jose
Scientific-Atlanta
2025 Gateway Pl
480-286-9152
MD Crofton
Scientific-Atlanta
2121 Baldwin Av
301-261-3233

ENGLAND

Middlesex
Scientific-Atlanta Europe
1-7 Sunbury Cross Centre
Sunbury on Thames 89751

SCI SYSTEMS INC

8600 S Memorial Parkway
Huntsville, AL 35802
205-883-4800
Contact: Peter A Highberg
■ Products & Services
Data entry terminals, portable
Intelligent (programmable) terminals
Interactive systems
Remote job entry terminals
Terminal controllers

SELECTERM INC

Two Audubon Rd
Wakefield, MA 01880
617-246-1300
Contact: Philip K Cioffi
■ Products & Services
Modems, voice-grade, low-speed
Cassettes
Cassette drives
Discs, floppy
Interactive systems
Teletypewriters
Video data terminals (KSR)
Word processors, communicating
Paper for terminals
Lease and resale organizations
Maintenance organizations
Used equipment

Branch Sales Offices:

MA Wakefield
Selecterm
2 Audubon Rd
617-246-1300
NJ Livingston
Selecterm
19 Microlab Rd
201-994-0950
NY NYC
Selecterm
305 Madison Av
212-682-6424
PA Blue Bell
Selecterm
1720 Walton Rd
201-994-0950
VA Falls Church
Selecterm
7700 Leesburg Pk
703-821-8838

SELENAR CORP

3054 Lawrence Expwy
Santa Clara, CA 95051
408-737-2777
Contact: Tom Seitzer
■ Products & Services
Digital plotters
Remote line printers
Teletypewriters, impact
Terminal controllers

Branch Sales Offices:

ONTARIO, CANADA
Ottawa
Allcom Data Ltd
1980 Merivale Rd
613-226-2340

GERMANY, WEST

Ottobrunn
ISI Computer GmbH
Alte Landstrasse 5
089-6060 71/72

S H COUCH CO

225 Patterson St
 Tecumseh, MI 49286
 517-423-7466
 ■ Products & Services
 Fire Detection/Protection Equipment

SHERWOOD DIGITAL ELECTRONICS CORP

2131 S Main St
 Salt Lake City, UT 84115
 801-486-4817
 Advertising page 156
 Contact: Jack Sherwood
 ■ Products & Services
 Code converters
 Computer/communications interfaces
 Protocol converters

Branch Sales Offices:

MN Minneapolis
 Communications Interfaces Inc
 Box 2320; Loop Station
 507-663-0087

PA Pittsburgh
 Expander Inc
 400 Sainte Claire Plz
 412-746-2910

SHUGART ASSOC

435 Oakmead Pkwy
 Sunnyvale, CA 94086
 408-733-0100
 Contact: Sharon Long
 ■ Products & Services
 Disc drives, floppy
 Disc drives, large

Branch Sales Offices:

CA Sunnyvale
 Shugart Assoc
 1231 Midas Way
 408-737-9741

CA Costa Mesa
 Shugart Assoc
 3001 Red Hill Ave
 714-979-1935

GA Atlanta
 Shugart Assoc
 41 Perimeter Place
 404-955-8968

MA Waltham
 Shugart Assoc
 1345-R Main St
 617-893-0560

MN Minneapolis
 Shugart Assoc
 6279 University Av NE
 612-574-9750

NJ Landing
 Shugart Assoc
 143 Main Rd
 201-584-7539

TX Richardson
 Shugart Assoc
 1215 Executive Dr
 214-234-3568

FRANCE
 Rungis
 Kolestin Onaindia
 3 Place Gustave Eiffel; Silic
 311
 1-686.00.85

GERMANY, WEST
 Munich
 Wolfgang Schaeffer
 Noerdliche Auffahrt Sallee 64
 089-17-60-06

SIDEREAL CORP

9600 SW Barnes Rd
 Portland, OR 97225
 503-227-0111
 Contact: R K Zapp
 ■ Products & Services
 Concentrators
 Front-end processors
 Line sharing units
 Minicomputers
 Packet processors
 Port sharing units
 Intelligent (programmable) terminals
 Teletypewriters
 Terminal controllers
 Video data terminals (KSR)
 Video data terminals (RO)
 Word processors, communicating
 Protocol converters

Branch Sales Offices:

CA San Jose
 Sideral Corp
 3003 Moorpark Ave
 408-475-8366

CA Los Angeles
 Sideral Corp
 9841 Airport Blvd
 213-645-1815

IL Des Plaines
 Sideral Corp
 1011 Touhy Ave
 312-824-3112

NY New York
 Sideral Corp
 485 Fifth Ave
 212-599-2111

TX Dallas
 Sideral Corp
 8035 Aviation Pl
 214-353-9191

SIECOR OPTICAL CABLES

631 Miracle Mile
 Horseheads, NY 14845
 607-739-3562
 Contact: Monica Van Etten
 ■ Products & Services
 Cables, optical fiber

SIEMENS CORP

186 Wood Av S
 Iselin, NJ 08830
 201-494-1000
 Advertising pages 130,131
 Contact: James Bass
 ■ Products & Services
 Tape, magnetic
 Tape, paper
 Tape punch/reader, paper
 Facsimile terminals
 Remote job entry terminals
 Teleprinters, impact
 Teleprinters, non-impact
 Teletypewriters

Branch Sales Offices:

CA Anaheim
 Siemens
 1440 Allec St
 714-991-9700

CA Burlingame
 Siemens
 860 Hinckley Rd
 415-697-6851

CT Meriden
 Siemens
 1A Prestige Dr
 203-235-7971

GA Atlanta
 Siemens
 3404 Oakcliff Rd, Bay C
 404-451-8151

IL Rosemont

Siemens
 5310 N Siemens Ct
 312-671-2810

MA Needham Hts

Siemens
 30 Wexford St
 617-449-3450

NJ Cherry Hill

Siemens
 18 Olney Av-TED
 609-424-1826

NY NYC

Siemens
 767 Fifth Av Gen Motors Bldg
 212-832-6601

VA Alexandria

Siemens
 1420 Prince St
 703-836-3743

SIGNETICS INC

Box 409
 Sunnyvale, CA 94086
 408-739-7700
 Contact: Gary Breeding
 ■ Products & Services
 Terminal controllers
 Protocol converters
 Voice digitizers

SOFTWARE INTERNATIONAL

Elm Square
 Andover, MA 01810
 617-475-5040
 Contact: Patrick L Shannon

SOFTWARE RESULTS CORP

1229 W 3 Ave
 Columbus, OH 43212
 614-421-2102
 Contact: Earle Richardson
 ■ Products & Services
 Front-end processors
 Minicomputers
 Computer/communications interfaces
 Data communications consultants
 Data com. softw, comms processor vend.
 Data com. softw, distr. dp systems vend.
 Data com. softw, independ. softw houses
 Data com. softw, intel. term. vendors
 Lease and resale organizations

SOLA, A UNIT OF GENERAL SIGNAL

1717 Busse Rd
 Elk Grove Vill, IL 60007
 312-439-2800
 Contact: R N Cornella
 ■ Products & Services
 Power supplies, uninterruptible; line
 correctors, etc.

Branch Sales Offices:

AL Huntsville
 Cartwright & Bean Inc
 2400 Bob Wallace Av
 205-533-3509

AZ Phoenix
 Zeus Inc
 546 E Portland
 602-253-6104

CA Pleasanton
 Moulthrop Sales Inc
 7080 Commerce Dr
 415-846-0550

CA Inglewood
 Jack Berman Co
 8295 S LaCienega Blvd
 213-649-6111

FL	Orlando Cartwright & Bean Inc 200 E Marks St 305-422-4531	NC	Charlotte Cartwright & Bean Inc 1165 S Commercial Av 704-377-5673	AL	Mobile Sorbus Inc 404-457-5544	
FL	Ft Lauderdale Cartwright & Bean Inc 4000 N State Rd 305-735-4900	NC	Raleigh Cartwright & Bean Inc 3948 Browning Pl 919-781-6560	AK	Phoenix Sorbus Inc 602-246-1085	
GA	Atlanta Cartwright & Bean Inc 90 W Wieca Sq 404-255-5262	OH	Cincinnati Baehr, Greenleaf & Assoc Inc 9505 Montgomery Rd 513-891-3826	AK	Tucson Sorbus Inc 2030 E Broadway 602-622-4983	
IL	Chicago Ind Reps Inc 5940 Touhy Av 312-647-7755	OH	Columbus Baehr, Greenleaf & Assoc Inc 1429 King Ave 614-486-4046	AR	Little Rock Sorbus Inc 501-372-2214	
IN	Indianapolis Baehr, Greenleaf & Assoc Inc 7098 N Shadeland 317-842-6204	OH	Lakewood Baehr, Greenleaf & Assoc Inc 14700 Detroit Av 216-221-9030	CA	San Rafael Sorbus Inc 4340 Redwood Hwy 415-472-4770	
KS	Wichita Forristal-Young Sls Co 2900 Woodland Av 316-838-7226	OH	Dayton Baehr, Greenleaf & Assoc Inc 3300 S Dixie Dr 513-293-1102	CA	Oakland Sorbus Inc 8000 Capwell Dr 415-569-6040	
LA	Metairie Cartwright & Bean Inc 2121 N Causeway Blvd 504-835-6220	OR	Portland Earl & Brown Co Inc 7719 SW Capitol Hwy 503-245-2283	CA	Sacramento Sorbus Inc 3400 Watt Ave 916-488-5029	
MA	Norwood JMG Inc 36 Plimpton Av 617-762-5333	TN	Memphis Cartwright & Bean Inc 560 S Cooper St 901-276-4442	CA	Stockton Sorbus Inc 209-462-5882	
MI	Southfield R C Merchant & Co Inc 29260 Franklin Rd 313-354-4300	TN	Knoxville Cartwright & Bean Inc 8705 Unicorn Dr 615-693-7450	CA	San Jose Sorbus Inc 1101 S Winchester BLvd 408-984-1947	
MI	St Joseph R C Merchant & Co Inc 505 Pleasant St 616-983-7378	TX	Dallas Erickson Sls Inc 8350 Meadow Rd 214-739-5833	CA	Fresno Sorbus Inc 209-445-1768	
MN	Edina Mel Foster Tech Sls Inc 7389 Bush Lake Rd 612-835-2252	TX	Houston Erickson Sales Inc 6833 S Gessner 713-498-2959	CA	Burbank Sorbus Inc 4201 Vanowen Pl 213-843-4441	
MS	Jackson Cartwright & Bean Inc 5150 Keele St 601-981-1368	TX	Austin Erickson Sales Inc 2525 Wallingwood Dr 512-327-5486	CA	Santa Barbara Sorbus Inc 805-643-3787	
MO	Kansas City Forristal-Young Sls Co 9010 E 50 Hwy 816-358-6771	WA	Seattle Earl & Brown Co Inc 320 2 West 206-284-1121	CA	San Diego Sorbus Inc 7370 Opportunity Rd 714-565-7905	
MO	St Louis Forristal-Young Sls Co 7110 Oakland Av 314-645-2360	WI	Milwaukee Ind Reps Inc 631 N Mayfair Rd 414-259-0965	CA	Anaheim Sorbus Inc 1440 S State College Blvd 714-991-0240	
NE	Omaha Forristal-Young Sls Co 11312 Martha Av 402-333-0800	SOLID STATE TECHNOLOGY INC 17 Wheeling Ave Woburn, MA 01801 617-935-3910 Contact: Ange Catalano ■ Products & Services Intelligent (programmable) terminals			CO	Denver Sorbus Inc 6000 E Evans Ave 303-758-5059
NJ	Cherry Hill Trinkle Sls Inc 1010 Haddonfield-Berlin Rd 609-795-4200	SORBUS INC 150 Allendale Rd King of Prussia, PA 19406 215-265-6700 Advertising page 164 Contact: Hal Platzkere ■ Products & Services Electrical-parameters test equipment Tech control centers Maintenance organizations Branch Sales Offices:			CO	Colorado Springs Sorbus Inc 303-473-4640
NJ	Englewood Baum & Epstein Assoc Inc 40 N Van Brunt St 201-569-7600	AL			CT	East Hartford Sorbus Inc 800 Silver Ln 203-569-0880
NM	Albuquerque Zeus Inc 310 Val Verde SE 515-268-3941	AL			FL	Tampa Sorbus Inc 5401 W Kennedy Blvd 813-877-5937
NY	Rochester L-Mar Assoc 315 Mt Read Blvd 716-328-5240	AL			FL	Cocoa Beach Sorbus Inc 813-877-8771
NY	E Syracuse L-Mar Assoc 216 Tilden Dr 315-437-7779	AL			FL	Pensacola Sorbus Inc 404-457-5544
		AL			GA	Atlanta Sorbus Inc 404-394-8994
		AL			GA	Atlanta Sorbus Inc 2231 Perimeter Park 404-457-4451
		AL			GA	Macon Sorbus Inc 404-457-4451

HI	Honolulu Sorbus Inc 765 Amana St 808-941-7477	MI	Battle Creek Sorbus Inc 616-968-1162	NY	New York Sorbus Inc 122 E 42 St 212-867-4130
ID	Boise Sorbus Inc 21 N Orchard 208-342-6421	MI	Flint Sorbus Inc 313-235-5921	NY	Hicksville Sorbus Inc 70 E Old Country Rd 516-681-8176
IL	Elmhurst Sorbus Inc 918 N Oaklawn Ave 312-279-0070	MI	Lansing Sorbus Inc 517-489-6239	NC	Charlotte Sorbus Inc 5700 Executive Center Dr 704-535-6970
IL	Peoria Sorbus Inc 309-674-7541	MI	Wyoming Sorbus Inc 1945 28 SW 616-538-5770	NC	Asheville Sorbus Inc 704-372-2941
IL	Springfield Sorbus Inc 217-544-8151	MN	Minneapolis Sorbus Inc 430 Oak Grove St 612-870-8974	OH	Cincinnati Sorbus Inc 8075 Reading Rd 513-821-6300
IL	Moline Sorbus Inc 309-797-3232	MN	Duluth Sorbus Inc 218-722-1564	OH	Kettering Sorbus Inc 1582 W Dorothy Ln 513-821-6300
IL	Rockford Sorbus Inc 318 Park Ave 815-965-5208	MO	Maryland Heights Sorbus Inc 929 Fee Fee Rd 314-434-7090	OH	Findlay Sorbus Inc 419-422-4121
IN	South Bend Sorbus Inc 143 Dixie Way S 219-288-6144	MO	St Louis Sorbus Inc 10770 Indian Head 314-429-7406	OH	Toledo Sorbus Inc 4427 Talmadge Rd 419-475-5390
IN	Fort Wayne Sorbus Inc 3416 N Anthony Blvd 219-743-3090	MO	Columbia Sorbus Inc 314-449-2318	OH	Cleveland Sorbus Inc 16101 Snow Rd 216-362-7230
IN	Indianapolis Sorbus Inc 5335 N Tacoma Ave 317-259-1191	NE	Omaha Sorbus Inc 3321 Hickory St 402-342-6711	OH	Youngstown Sorbus Inc 216-759-2886
IA	Des Moines Sorbus Inc 515-262-7945	NV	Reno Sorbus Inc 702-329-2476	OH	Akron Sorbus Inc 1423 Copley Rd 216-836-4958
KS	Kansas City Sorbus Inc 3500 Rainbow Blvd 913-831-1700	NV	Las Vegas Sorbus Inc 702-735-7802	OH	Columbus Sorbus Inc 2202 S Hamilton Rd 614-864-7280
KS	Topeka Sorbus Inc 913-235-1373	NH	Concord Sorbus Inc 603-225-5533	OK	Tulsa Sorbus Inc 918-627-8386
KS	Wichita Sorbus Inc 309 S Laura 316-262-2983	NJ	Clifton Sorbus Inc 1030 Clifton Ave 201-779-5100	OK	Oklahoma City Sorbus Inc 405-232-3989
KY	Louisville Sorbus Inc 317-638-7877	NM	Albuquerque Sorbus Inc 505-243-0102	OR	Portland Sorbus Inc 208 SE Oak St 503-222-3891
LA	Metairie Sorbus Inc 3330 Lake Villa Dr 504-887-9131	NY	Melville Sorbus Inc 516-420-0115	OR	Salem Sorbus Inc 503-222-3891
LA	Shreveport Sorbus Inc 714 Grand Ave 318-221-2315	NY	White Plains Sorbus Inc 470 Manaroneck Ave 914-761-3801	OR	Eugene Sorbus Inc 503-343-1437
LA	Monroe Sorbus Inc 318-323-1082	NY	Rochester Sorbus Inc 999 Buffalo Rd 716-235-6820	PA	Cornwells Heights Sorbus Inc 11 Neshaminy Plaza 215-638-1620
MD	Baltimore Sorbus Inc 1900 Sulphur Springs Rd 301-242-2336	NY	Cheektowaga Sorbus Inc 4245 Union Rd 716-631-9230	PA	Harrisburg Sorbus Inc 4751 Lindle Rd 717-939-9343
MA	Natick Sorbus Inc 209 W Central St 617-237-4550	NY	Albany Sorbus Inc 845 Central Ave 518-438-6201	PA	Pittsburgh Sorbus Inc 21 Yost Blvd 412-271-7131
MI	Livonia Sorbus Inc 29200 Vassar Ave 313-478-8700	NY	Elmira Sorbus Inc 1408 Lake St 518-438-6201	PA	Erie Sorbus Inc 814-454-6510
MI	Saginaw Sorbus Inc 517-752-6241	NY	Syracuse Sorbus Inc 202 Arterial Rd 518-438-6201	RI	Cranston Sorbus Inc 1145 Reservoir Ave 401-943-6400

TN Memphis
Sorbus Inc
2005 Nonconah Blvd
901-345-2853

TN Nashville
Sorbus Inc
1451 Elm Hill Pike
901-345-2853

TN Chattanooga
Sorbus Inc
615-265-1335

TN Knoxville
Sorbus Inc
615-525-1271

TN Oak Ridge
Sorbus Inc
615-483-9593

TX Hurst
Sorbus Inc
951 W Pipeline Rd
817-284-9464

TX Dallas
Sorbus Inc
2600 Stemmons Fwy
214-631-1700

TX Waco
Sorbus Inc
871-772-0110

TX Houston
Sorbus Inc
4120 Southwest Fwy
713-621-7930

TX San Antonio
Sorbus Inc
9033 Aero Ln
512-223-3121

TX Austin
Sorbus Inc
512-837-2088

TX Corpus Christi
Sorbus Inc
512-883-8901

TX Ft Hood
Sorbus Inc
817-773-6007

TX Lubbock
Sorbus Inc
806-797-2733

TX El Paso
Sorbus Inc
915-532-7135

UT Salt Lake City
Sorbus Inc
2161 Regent St
801-487-8679

VA Vienna
Sorbus Inc
2095 Chain Bridge Rd
703-893-6698

VA Richmond
Sorbus Inc
2016 N Hamilton St
804-355-2643

VA Norfolk
Sorbus Inc
1 Koger Executive Ctr
804-355-2643

WA Tukwila
Sorbus Inc
637 Strandor Blvd
206-575-1202

WA Spokane
Sorbus Inc
206-924-8544

WV Parkersburg
Sorbus Inc
304-422-1323

WI West Allis
Sorbus Inc
9618 W Greenfield Ave
414-257-2715

WI Appleton
Sorbus Inc
414-734-4012

WI Oshkosh
Sorbus Inc
414-734-4012

WI Racine
Sorbus Inc
414-634-3579

WI Wausau
Sorbus Inc
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Sorbus Inc
110 Fordem Ave
608-241-1616

WI Beloit
Sorbus Inc
608-754-8011

SOROC
165 Freedom Ave
Anaheim, CA 92801
714-992-2860
Contact: John Amos
■ Products & Services
Intelligent (programmable) terminals
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

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Microage
1425 W 12 Pl
213-515-4727

CA Los Angeles
David Jamison Carlyle Corp
2 Century Plaza
213-277-4562

CA Tustin
Terminal Rentals
1542 A Moulton Pkwy
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205-321-1000
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Multiplexers, time division
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Digital service units
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Data entry terminals, portable
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)

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New Haven, CT 06506
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Fiber optic systems
DDP systems
Remote line printers

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Video data terminals (RO)
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Data com. softw, comms processor vend.
Maintenance organizations

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Contact: Gen Adv Mgr
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Digital service units
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Modems, multipoint
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Modems, wideband, half-group band
Modems, wideband, group band
Data content monitors
Network management centers
Tech control centers
Disc drives, floppy
Batch terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Data communications consultants

SP COMMUNICATIONS
1 Adrian Court
Burlingame, CA 94010
415-692-5600
Contact: Dave Neirmeyer
■ Products & Services
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Facsimile terminals

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SPC Comm
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203-348-7036

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SPC Comm
111 Founders Plz
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SPC Comm
4250 Perimeter Park S
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226 Carondelet St
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SPC Comm
Eight Charles Plz
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SPC Comm
27 Gill St
617-482-8420

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27830 Orchard Lake
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SP TELECOMMUNICATIONS PROCESSING CO

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212-697-2306

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Specialized carriers
Value-added carriers

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344 New Albany Rd
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609-234-5700

Advertising page 75

Contact: Joseph Bulsak
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Modem sharing units
Port sharing units
Line drivers
Modems, limited distance
Data content monitors
EIA cable testers
Electrical-parameters test equipment
Error rate detectors
Protocol analyzers
Response-time monitors
Network management centers
Tech control centers
Telecommunications monitor
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Intelligent (programmable) terminals
Teleprinters, non-impact
Video data terminals (KSR)
Video data terminals (RO)
Cables, electrical prefabricated extender
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Furniture, cabinets, terminal enclosures
Modem eliminators
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switch. equip.
Select. & transfer equip., patch. equip.
Select. & transfer equip., reconfig. equip.
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Switches, data communications, manual
Data communications consultants

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415-326-6851

CA San Jose
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CO Denver
Zeus Electronics Inc
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Box 1727
404-378-5276

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MODEMSplus
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MD Silver Springs
Computer Complements
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301-589-2802

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Datamart
180 Linden St
617-235-5520

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Information Products
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Spectron Corp
127 Gaither Dr, Suite B
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41 McLaren St
922-5358

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Croydon, Victoria
Datacraft Pty Ltd
Box 353
725-5477

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Av Bogaert; 326 Villa Vermillia
272-4255

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Santiago
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Santa Lucia 232; 61-A 61-B
391-241

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69-89-38

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00945-1161100

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70/81 Akeman Street
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06-262-3471

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3170210101

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694979

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361-745

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252-5091

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239-4222

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215-542-4011
Contact: James Nichols
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Cassette drives
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Tape drives, magnetic
Tape punch/reader, paper
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Interactive systems
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Remote job entry terminals
Video data terminals (KSR)
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2722 Michelson Dr
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Contact: Suzanne Hubner
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Discs, floppy
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Maintenance organizations

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Modems, wideband, super-group band

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Storage Technology Corp
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TX Dallas
Storage Technology Corp
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Louisville, CO 80027
303-497-5151
Contact: Gordon Swartzfager
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44-1-937-9638

JAPAN
Minato-ku, Tokyo
STC Japan Ltd
Taneda Bldg 8F 2-5 1-Chrome
81-3-470-4871

Stay up-to-date with new
catalog information and new
product announcements.
Turn to **UpDate Service Card,**
page 201.

SUN INFORMATION SERVICES CO
656 E Swedesford Rd
Wayne, PA 19087
215-293-0660
Contact: Lou Buffington

■ Products & Services
Select. & transfer equip., monitor & test
switch. equip.
Data communications consultants
Data com. softw, distr. dp systems vend.
Data com. softw, independ. softw houses
Timesharing/service bureaus

Branch Sales Offices:

CT Westport
Sun Information Services
500 Post Rd E
203-226-3517

DC Washington
Sun Information Services
2000 K St Northwest
202-466-4022

IL Chicago
Sun Information Services
625 N Michigan Ave
312-951-8340

MA Boston
Sun Information Services
100 Summer St
617-542-1207

NJ Princeton
Sun Information Services
29 Emmons Dr
609-452-8110

NY New York
Sun Information Services
122 E 42 St
212-490-2811

OK Tulsa
Sun Information Services
907 South Detroit
918-586-6000

PA Wayne
Sun Information Services
680 E Swedesford Rd
215-293-0660

PA Philadelphia
Sun Information Services
1500 Center Sq
215-972-4800

TX Dallas
Sun Information Services
8350 N Central Exprwy
214-739-9800

TX Houston
Sun Information Services
6330 W Loop
713-262-8050

SUPPORT SYSTEMS INTERNATIONAL

150 S Second St
Richmond, CA 94804
415-234-9090
Contact: Ben Parsons
■ Products & Services
Cables, electrical prefabricated extender
Cables, optical fiber
Data jacks and plugs
Switches, data communications, manual

Branch Sales Offices:

CA Richmond
Support Systems International
150 S Second St
415-234-9090

CA San Rafael
Support Systems International
301 Irwin St
415-456-9090

PA Pittsburgh
Support Systems International

SWEDA INTERNATIONAL

34 Maple Ave.
Pine Brook, NJ 07058
201-575-8100

Contact: James Murray

■ Products & Services

Tape, paper
Tape punch/reader, paper Teleprinters,
impact

SYKES DATATRONICS

375 Orchard St
Rochester, NY 14606
716-458-8000

Advertising page 139

Contact: Al Montevicchio

■ Products & Services

Minicomputers
DDP systems
Floppy disc recorders
Batch terminals
Intelligent (programmable) terminals
Remote job entry terminals
Word processors, communicating

SYNTECH CORP

11810 Parklawn Dr
Rockville, MD 20852
301-770-0550

Contact: George Fritkin

■ Products & Services

Modem sharing units
Multiplexers, time division
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Network management centers
Tech control centers
Telecommunications monitor
Automatic answering units
Modem eliminators

SYNTEST CORPORATION

344 Boston Post Rd
Marlboro, MA 01752
617-481-7827

Contact: Curtis Hoffman

■ Products & Services

Remote job entry terminals
Teleprinters, impact
Data com. softw, comms processor vend.

Branch Sales Offices:

CA Encino
King Eng Inc
17333 Rancho St
213-981-8677

FL Satellite Beach
Reynolds and Assoc Inc
476 N AIA
305-773-4700

IN Columbus
Miltronics
3809 Colonial Dr
812-376-6321

MD Silver Spring
Source Assoc
10300 Naglee Rd
301-431-0587

MA Waltham
Dane Hayes
296 Newton St
617-894-7290

MA Waltham
Digital Sales Assoc
9 Spring St
617-481-7827

PA Newtown Square
SWR Assoc
7 Reese Av
215-356-8550

TX Fort Worth
El Tec Sales Inc
Box 18249
817-268-2896

VA Fairfax
Schibley Assoc
10604 Warwick Av
703-591-3008

WA Seattle
Datacom Assoc
1612 Eighth Ave W
206-285-2525

ENGLAND

Richmond, Surrey
Russett Instruments Ltd
RIL House Sheen Park

ENGLAND

Herts
Lyons Instruments
Hoddesdon

FRANCE

Paris
ETS Kovacs
177 Rue de la Convention

GERMANY, WEST

Muenchen
Messgeraete Vertrieb
St Martin Strasse 30;
Kleinberghofen bei

SWEDEN

Vaellingby
M Stenhardt AB
Haesselby Torgio S-162-03

For further catalog information, turn to
UpDate Service Card, page 201.

SYSTEMATICS GENERAL CORP

2922 Telestar Ct
Falls Church, VA 22042
703-698-8500

Advertising page 135

Contact: George Brazel

■ Products & Services

Batch terminals
Graphic display terminals
Intelligent (programmable) terminals
Teleprinters, impact

Branch Sales Offices:

AUSTRALIA

Crows Nest
Datamatic Ltd
90 Alexander St

SYSTEM INDUSTRIES

525 Oakmead Pkwy
Sunnyvale, CA 94086
408-732-1650

Contact: Ken Winton

■ Products & Services

Disc drives, floppy

Branch Sales Offices:

CA Los Angeles
Systems Industries
2049 Century Park E
213-557-0384

CA Irvine
Systems Industries
18001 Skypark S
714-754-6555

GA Atlanta
Systems Industries
3355 Lenox Rd NE
404-231-3640

IL Schaumburg
Systems Industries
999 Plaza Dr
312-843-3707

MD Rockville
Systems Industries
414 Hungerford Dr
301-762-1700

NJ Wayne
Systems Industries
Box 1152
201-694-3334

NY Greatneck
Systems Industries
50 Knightsbridge Rd
516-482-6082

OH Cincinnati
Systems Industries
11750 Chesterdale Rd
513-771-0075

RI Warwick
Systems Industries
57 Kilvert St
401-739-8070

TX Houston
Systems Industries
800 W Belt So
713-977-3108

SYSTEMS ARCHITECTS INC

Thomas Patton Dr
Randolph, MA 02368
617-961-4840

Contact: Michael D Sadofsky

■ Products & Services

Data communications consultants
Data com. softw, independ. softw houses
Timesharing/service bureaus

SYSTEMS FURNITURE CO

13900 S Figueroa St
Los Angeles, CA 90061
213-327-4000

Contact: Charles Shroeder

■ Products & Services

Furniture, cabinets, terminal enclosures

TAB PRODUCTS CO

2690 Hanover St
Palo Alto, CA 94304
415-493-5790

Contact: Gary Evans

■ Products & Services

Batch terminals
Intelligent (programmable) terminals
Remote job entry terminals

Branch Sales Offices:

AZ Tempe
TAB Products Co
825 S Hohokam Dr
602-967-3371

CA El Monte
TAB Products Co
9440 Telstar Ave
213-575-3404

CA Palo Alto
TAB Products Co
1451 California Ave
415-858-2500

CA Sacramento
TAB Products Co
2110 K St
916-441-2897

CA San Diego
TAB Products Co
7585 Convoy Ct
714-292-5127

CA San Mateo
TAB Products Co
800 S Claremont
415-348-7262

CO Denver
Total Business Equipment Co
1250 Bannack St
303-629-1976

CT W Hartford
TAB Products Co
630 Oakwood Ave
203-247-3271

FL Miami
TAB Products Co
4800 NW 167 St
305-624-1377

GA Atlanta
Southern Peripherals &
Instruments Inc
1954 Airport Rd
404-455-3518

HI Honolulu
TAB of Hawaii
Box 10309
808-536-6727

IL Elmhurst
TAB Products Co
970 N Oaklawn Ave
312-279-0222

MD Rockville
TAB Products Co
6110 Executive Blvd
301-881-8090

MA Wellesley
Marketechs Inc
148 Linden St
617-237-4343

MI Dearborn Heights
TAB Products Co
20422 Van Born
313-278-5640

MO Raytown
Long's Data Service
9503 E 63 St
816-358-9003

NJ Pennsauken
TAB Products Co
220 Cooper Ctr
609-663-6120

NJ West Caldwell
TAB Products Co
1140 Bloomfield Ave
201-575-7690

NY Albany
TAB Products Co
855 Central Ave
518-482-8816

NY New York
TAB Products Co
360 Lexington Ave
212-972-1420

NC Charlotte
TAB Products Co
4000 Park Rd
704-525-0993

OH Cincinnati
Digital Design
645 Walnut St
513-421-5005

OH Columbus
The Data House
6427 Busch Blvd
614-846-2566

OH Dayton
TAB Products Co
6238 Executive Blvd
800-543-7872

OR Portland
TAB Products Co
1525 SE Tenth Ave
503-233-4986

TX Fort Worth
The Latham Co
730 N Sylvania St
817-834-2271

TX Irving
Noakes Data Comm
3330 Stovall
214-255-0441

TX Houston
Tel-Tex Inc
2825 W 11 St
713-868-6000

TX Austin
Tel-Tex Inc
8900 Shoal Creek

UT Salt Lake City
TAB Products Co
2361 S Main
810-487-3872

WA Bellevue
TAB Products Co
11101 NE 11
206-453-8917

TALLY CORP
8301 S 180th St
Kent, WA 98031
206-251-5552
Advertising page 137
Contact: Horst Mader
■ Products & Services
Bar code readers
Data entry terminals, portable
Intelligent (programmable) terminals
Interactive systems
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

CA Redondo Beach
Tally Corp
1826 S Elena St
213-378-0805

CA San Jose
Tally Corp
4040 Moorpark Av
408-247-0897

CA Anaheim
Tally Corp
2120 E Howell Av
213-378-0805

CA Orinda
Tally Corp
23 Altarinda Rd
415-254-8350

FL Pompano Beach
Tally Corp
4699 N Federal Hwy
305-781-0793

GA Atlanta
Tally Corp
6520 Powers Ferry Rd
404-955-1630

IL Schaumburg
Tally Corp
Bldg 4 890 E Higgins Rd
312-885-3678

MA Burlington
Tally Corp
113 Terrace Hall Av
617-272-8070

PA Blue Bell
Tally Corp
1777 Walton Rd
215-628-9998

TX Dallas
Tally Corp
2925 LBJ Fwy
214-620-7311

WA Kent
Tally Corp
8301 S 180th St
206-251-6730

AUSTRIA

Vienna
Tally GesmbH
Zetchegeasse 17
43-222-672647

ENGLAND

Reading, Berkshire
Tally Ltd
7 Cremyll Rd
44-734-580-141

FRANCE

Chatou
Tally France SARL
40 Chemin Des Vignobles
33-1-913-5827

GERMANY, WEST

Frankfurt/Main
Tally GmbH
Sontraer Strasse 18
49-611-417191

ITALY

Milano
Tally Italia SRL
Via Ciardi, 1
39-02-404-5546

TALOS SYSTEMS INC

7419 E Helm Dr
Scottsdale, AZ 85260
602-948-6540
Contact: Val Baldwin
■ Products & Services
Telescriber

TANDBERG DATA INC

4060 Morena Blvd
San Diego, CA 92117
714-270-3990
Contact: Gary Pyles
■ Products & Services
Cartridge drives
Tape drives, magnetic

Branch Sales Offices:

NJ Ramsey
Tandberg Data Inc
Box 321
201-825-7640

TANDEM COMPUTERS

19333 Valco Pkwy
Cupertino, CA 95014
408-996-6000
Contact: Carol Hubler
■ Products & Services
Front-end processors
Message switchers
Minicomputers
DDP systems
Add-on main memory
Cartridges
Cartridge drives
Disc drives, large
Tape, magnetic
Tape drives, magnetic
Automatic answering units
Automatic calling units
Cables, electrical prefabricated extender
Data com. softw, comms processor vend.
Maintenance organizations

Branch Sales Offices:

AZ Phoenix
Tandem Computers
3225 N Central
602-277-8568

CA Long Beach
Tandem Computers
3711 Long Beach Blvd
213-595-7356

TAU

CA San Francisco
Tandem Computers
One Market Plaza
415-777-1230

CO Englewood
Tandem Computers
10 Inverness Dr
303-779-6766

CT Hamden
Tandem Computers
1890 Dixwell Av
203-281-1149

IL Schaumburg
Tandem Computers
1827 Walden Office Sq
312-397-5200

MA Newton Ctr
Tandem Computers
199 Wells Ave
617-964-6500

MI Livonia
Tandem Computers
32480 Schoolcraft Rd
313-425-4110

MN Minneapolis
Tandem Computers
2850 Metro Dr
612-854-5441

MO Maryland Heights
Tandem Computers
201 Progress Pkwy
314-878-7180

NE Omaha
Tandem Computers
12308 Westover Rd

NJ Hasbrouch Heights
Tandem Computers
377 Route 17
201-288-6050

NY New York
Tandem Computers
One Penn Plaza
212-594-2320

NC Greensboro
Tandem Computers
5601 Roanne Way
919-294-6131

OH Columbus
Tandem Computers
2405 Cherokee
614-244-2205

OH Cincinnati
Tandem Computers
1313 E Kemper
513-671-6161

OH Wickliffe
Tandem Computers
2200 Larchmont Dr
216-261-9993

PA Pittsburgh
Tandem Computers
5 Gateway Ctr
412-562-0262

PA Trevoze
Tandem Computers
One Neshaminy Interplex
215-245-0600

TX Arlington
Tandem Computers
1201 Watson Rd
817-640-8771

TX Houston
Tandem Computers
505 N Belt E
713-931-9892

TX Dallas
Tandem Computers
4101 McEwen

VA Falls Church
Tandem Computers
6231 Leesburg Pike
703-243-5225

WA Bellevue
Tandem Computers
1601 116 Ave NE
206-454-3351

ONTARIO, CANADA
Toronto
Tandem Computers
55 University Av
416-863-0575

ONTARIO, CANADA
Place Bonaventure
Tandem Computers
21 Elysse
514-866-4176

ENGLAND
Uxbridge
Tandem Computers
187 High St
734-22296

FRANCE
Paris
Tandem Computers
2 Rue Nicoles Ledoux
011-33-1-687-3466

GERMANY, WEST
Frankfurt
Tandem Computers
Bernerstrasse 50
611-5072071

GERMANY, WEST
Dusseldorf-Unterbach
Tandem Computers
Gerresheimer Landstr 69
0211-203096-97

GERMANY, WEST
Munich
Tandem Computers
089-3111008-9

TAU-TRON INC
27 Industrial Ave
Chelmsford, MA 01824
617-256-9013
Contact: John B Connolly
■ Products & Services
Error rate detectors

Branch Sales Offices:

AZ Scottsdale
Grady Moore Assoc
8621 E Columbus
602-994-9519

CA S Pasadena
Beckrep Inc
1110 Fair Oaks Ave
213-799-4634

CO Boulder
Grady Moore Assoc
Box 4619
303-494-3351

FL Largo
Synergetic Representatives
13498 Ulmerton Rd
813-596-5331

GA Atlanta
Magaro & Assoc
Box 76652
404-252-6609

MN Minneapolis
Waytek Inc
8137 Pleasant Ave
612-884-2317

NJ Haworth
Central Assoc
Box 10
201-568-0808

NM Albuquerque
Grady Moore Assoc
5901 Gibson Blvd SE
505-262-1416

NY Old Bethpage
Central Assoc
11 Neil Dr
516-694-3205

TX Dallas
Airep Electronics Inc
10155 Plano Rd
214-349-4360

UT Salt Lake City
Grady Moore Assoc
1153 Harrison
810-484-3365

VA Springfield
Sales Technology Inc
Box 575
703-971-6681

ONTARIO, CANADA
Ottawa
Comtest Communications Products
Ltd
374 Britannia Rd
613-828-5236

If you know the name of the product, you can find out who makes it in the **Products & Services Directory, page 5.**

T-BAR INC
141 Danbury Rd
Wilton, CT 06897
203-762-8351
Advertising pages 78,157
Contact: John Tobey
■ Products & Services
Data content monitors
Network management centers
Tech control centers
Data jacks and plugs
Select. & transfer equip., monitor & test switch. equip.
Select. & transfer equip., patch. equip.
Select. & transfer equip., reconfig. equip.
Switches, data communications, automatic
Switches, data communications, manual

Branch Sales Offices:

CA Oakland
Persons & Assoc
8105 Edgewater Dr
415-569-6461

CA Arcadia
T-Bar Inc
735 W Duarte Rd
213-574-7930

CO Littleton
Cropley Inc
2275 E Arapahoe Rd
303-794-4231

GA Atlanta
T-Bar Inc
2814 New Spring Rd
404-432-8001

IL Chicago
H & H Sales
1507 N Dearborn
312-337-4478

KS Shawnee Mission
Inland Assoc
2310 W 75 St
913-362-2366

- MD** Rockville
T-Bar Inc
51 Monroe St
301-279-0205
- MI** Lathrup Village
T-Bar Inc
28551 Southfield Rd
313-557-8330
- MN** Minneapolis
Delta Comm Systems
8120 Penn Av S
612-884-0202
- MO** St Louis
Inland Assoc
13100 Manchester Rd
314-821-3742
- NJ** Bellmawr
Applied Delta Systems
101 Kor Center F
609-931-31
- NY** Rochester
Annese Assoc Inc
100 Berwick Rd
716-654-9132
- NY** Herkimer
Annese Assoc Inc
Box 127
315-895-7469
- NY** Great Neck
Harvey J Krasner Assoc
33 Great Neck Rd
516-487-0690
- OH** Hillside
T-Bar Inc
4415 W Harrison St
312-449-6006
- OH** Cincinnati
T-Bar Inc
7754 Camargo Rd
513-793-3737
- PA** Pittsburgh
Applied Delta Systems
16 East West Dr
412-931-1960
- TX** Dallas
Computer Assoc
8383 Stemmons Expwy
214-634-1320
- WA** Seattle
SJI Corp
626 S Alaska St
206-624-9020
- WI** Brookfield
Delta Comm Systems
14640 W Greenfield Av
414-784-3663
- ONTARIO, CANADA**
Scarborough
R-O-R Assoc Ltd
21 Rolark Dr
416-291-7121
- AUSTRALIA**
N Ryde
Racal Elec Pty Ltd
47 Talavera Rd
- ENGLAND**
Reading, Berks
Racal Milgo Ltd
Bennett Rd
- HONG KONG**
Hong Kong
Cable & Wireless Sys Ltd
Connaught Rd Central, Box 4477
- INDIA**
New Delhi
Harvik Elect Corp
9A Connaught Pl
- ISRAEL**
Tel Aviv
KBL Elect
17 Ben Shaprut St
- JAPAN**
Tokyo
Rikei Corp
1-26-2 Nishi-Shiniuku
- NETHERLANDS**
Slough, Berks
T-Bar Inter Europe
95 High St
- PHILIPPINES**
Makati
Philippine Consultancy Sys
115 Esteban Street
- REPUBLIC OF CHINA**
Taipai, Taiwan
How Teh Enterprise Ltd
65 Shung Chiang Rd
- SINGAPORE**
Singapore
Cable & Wireless Sys Ltd
Box 444; Columbo Ct
- SOUTH AFRICA**
Randelburg Transvaal
Grinaker Elec Ltd
Box 50994 2125
- VENEZUELA**
Caracas
NCR Summa Sistemas
Apartado 1907
- TECHNIPOWER**
DIVISION OF PENRIL CORP
PO Box 222, Commerce Park
Danbury, CT 06810
203-748-7001
Contact: Attn: VP Mktg
■ Products & Services
Power supplies, uninterruptible; line correctors, etc.
Protocol converters
Branch Sales Offices:
- AZ** Glendale
Adtek Inc
5322 N 59 Ave
602-846-4650
- CA** Los Angeles
Cain Technology
522 S Sepulveda Blvd
213-476-2251
- CA** Los Altos
Cain-White
105 Fremont Ave
415-948-6533
- CO** Denver
Electrodyn
4600 E Asbury Circle
303-759-4409
- CT** Hamden
JBL Assoc
74 Terrace Ave
203-28-3161
- FL** Ft Lauderdale
CBC Electronics Inc
8154 N University Dr
305-722-3850
- IL** La Grange
PVA Company Inc
521 S La Grange Rd
312-579-9300
- MD** Rockville
Farrell Assoc Inc
416 Hungerford Dr
301-424-9460
- MA** Woburn
Component Technology
175 New Boston Pk
617-933-5390
- MI** Grand Rapids
R P Urban & Assoc
1119 Burton St SE
616-245-0511
- MN** Minneapolis
The Mark Co
3832 Zenith Ave
612-920-1009
- MO** St Louis
Ensco-Rep Inc
11714 Lackland Industrial Dr
314-567-3935
- NM** Albuquerque
Rontek
3004 El Marta Ct NE
505-299-4124
- NY** Great Neck
Set Marketing Inc
287 Northern Blvd
516-466-0550
- NY** Liverpool
R & D Assoc
123 Sun Harbor Dr
315-457-0100
- OH** Cleveland
Components Inc
10600 Sprague Rd
216-243-9200
- TX** Richardson
Scientific Sales Co
777 S Central Expwy
214-231-6541
- WA** Bellevue
Topp Engineering Sales Corp
3715 128th Av SE
206-747-5400
- ONTARIO, CANADA**
Burlington
White Radio Ltd
4445 Harvester Rd
416-632-6894
- ISRAEL**
Ramat Hasharon
RDT Electronic Engr Ltd
Box 75
483211-5
- SWITZERLAND**
Montreux
Penril Technical SA
6, Rue de la Corsaz
21-623651
- TECHNOLOGY TRANSFER INC**
PO Box 49765
Los Angeles, CA 90049
213-476-9747
Contact: Leonard Kleinrock
■ Products & Services
Data communications consultants
- TECHTRAN INDUSTRIES**
200 Commerce Dr
Rochester, NY 14623
716-334-9640
Contact: Attn: VP Mktg
■ Products & Services
Cassette drives
Disc drives, floppy
Batch terminals
Data entry terminals, portable
Remote job entry terminals
Branch Sales Offices:
- CA** Los Angeles
Techtran Industries
5456 McConnell Ave
213-391-0507
- CA** Torrance
Allen Edwards
2808 Oregon Ct
213-328-9770

CA Cupertino
Western Microtechnology
10040 Bubb Rd
408-292-2741

FL Orlando
Gentry Assoc
550 N Bumby Av
305-894-4401

IL Lansing
Bexdata
2533 Bernice Rd
312-239-3282

MA Wakefield
IMF Sales
Lakeside Office Park
617-245-8900

MN Minneapolis
Bexdata
7701 Normandale Blvd
612-835-5220

MO Grandview
Digital Systems Sales
4006 E 137 Tr
816-765-3337

NJ Ridgewood
Instrumentation Sls
Box 403
201-445-5210

NM Albuquerque
Rustco Enterprises
127 Gen Somerville NE
505-292-2741

NY Pittsford
J Cameron Assoc
1 Grove St
716-385-1681

OH Centerville
Micro Sls Corp
34 Virginia Av
513-433-8171

VA Annandale
Lankenau Assoc
3705 Forest Grove Dr
703-256-0800

TEC INC
2727 N Fairview Av
Tucson, AZ 85705
602-792-2230
Advertising page 132
Contact: Dale Marthaler
■ Products & Services
Badge readers
Remote job entry terminals
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

CA Campbell
TEC Inc
274 E Hamilton
408-374-2660

CA Santa Ana
TEC Inc
1971 E 4 St
714-541-4137

FL W Palm Beach
TEC Inc
2001 Palm Beach Lakes Blvd
305-684-1604

IL Oak Brook
TEC Inc
2625 Butterfield Rd
312-655-1060

MA Framingham
TEC Inc
One Framingham Centre
617-879-6886

MN Edina
Grayden & Flemmer Inc
7009 Washington Ave
612-941-1120

NY Englewood Cliffs
TEC Inc
333 Sylvan Av
201-871-0244

PA Pittsburg
TEC Inc
201 Penn Center Blvd
412-824-5442

TX Lewisville
TEC Inc
192 Sivic Cir
214-436-9523

BELGIUM
Brussels
TEC International Inc
148 Avenue Louise
02-649815

To find out who makes a
certain product, turn to
**Products & Services Direc-
tory, page 5.**

TEK-COM
2142 Paragon Dr
San Jose, CA 95131
408-263-7400
Contact: Les Radebold
■ Products & Services
Acoustic couplers
Modems, limited distance
Modems, multipoint
Modems, multipoint
Modems, voice-grade, low-speed
Automatic answering units
Cables, electrical prefabricated extender
Computer/communications interfaces
Data access arrangement devices

TEKTRONIX INC
PO Box 500 MS 76-260
Beaverton, OR 97077
503-644-0161
Advertising pages 90,91
Contact: H K Quigley Jr
■ Products & Services
Modems, voice-grade, low-speed
EIA cable testers
Error rate detectors
Protocol analyzers
Telecommunications monitor
Cartridges
Cartridge drives
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Tape, magnetic
Tape drives, magnetic
Tape, paper
Batch terminals
Digital plotters
Graphic display terminals
Intelligent (programmable) terminals
Interactive systems
Remote line printers
Terminal controllers
Video data terminals (KSR)
Maintenance organizations

Branch Sales Offices:

AL Huntsville
Tektronix Inc
3322 S Memorial Pkwy
205-881-2912

AZ Phoenix
Tektronix Inc
4130 E Wood St
602-268-8861

CA Pleasant Hill
Tektronix Inc
3451 Vincent Rd
415-932-4949

CA Irvine
Tektronix Inc
17052 Jamboree Blvd
714-556-8080

CA Woodland Hills
Tektronix Inc
21300 Erwin St
213-999-1711

CA Los Gatos
Tektronix Inc
985 University Av
408-358-3491

CA San Diego
Tektronix Inc
7827 Convoy Ct
714-292-7330

CA Santa Clara
Tektronix Inc
3200 Coronado Dr
408-249-5500

CO Englewood
Tektronix Inc
14 Inverness Dr E
303-773-1011

CT Milford
Tektronix Inc
40 Commerce Park Rd
203-877-1494

FL Fort Lauderdale
Tektronix Inc
1871 W Oakland Prk Blvd
305-731-1220

FL Orlando
Tektronix Inc
1040 Woodcock Rd
305-894-3911

FL Pensacola
Tektronix Inc
6425 N Pensacola Blvd
904-476-1897

GA Norcross
Tektronix Inc
3320 Holcomb Bridge Rd
404-449-4770

HI Honolulu
Tektronix Inc
2979 Ualena St
808-845-4531

IL Rolling Meadows
Tektronix Inc
5350 Keystone Ct
312-259-7580

IN Indianapolis
Tektronix Inc
6121 E 30 St
317-545-2351

KS Overland Park
Tektronix Inc
10580 Barkley
913-341-3344

LA Metairie
Tektronix Inc
3004 34 St
504-837-8454

MD Lutherville
Tektronix Inc
1526 York Rd
301-321-7000

- MD Rockville
Tektronix Inc
2 Research Ct
301-948-7151
- MA Lexington
Tektronix Inc
482 Bedford St
617-861-6800
- MI Farmington
Tektronix Inc
24155 Drake Rd
313-478-5200
- MN St Paul
Tektronix Inc
4660 Churchill Rd
612-484-8571
- MO Hazelwood
Tektronix Inc
422 Anglum Rd
314-731-4696
- NJ Woodbridge
Tektronix Inc
40 Gill Ln
201-636-8616
- NM Albuquerque
Tektronix Inc
1258 Ortiz Dr SE
505-265-5541
- NY Albany
Tektronix Inc
16 Computer Dr W
518-458-7291
- NY Woodbury
Tektronix Inc
100 Crossways Park W
516-364-9060
- NY Poughkeepsie
Tektronix Inc
38 Haight Ave
914-454-7540
- NY Rochester
Tektronix Inc
1210 Jefferson Rd
716-244-2600
- NY North Syracuse
Tektronix Inc
1 Northern Concourse
315-455-6661
- NC Raleigh
Tektronix Inc
3725 National Dr
919-782-5624
- OH Middleburg Heights
Tektronix Inc
7830 Freeway Circle
216-243-8500
- OH Dayton
Tektronix Inc
501 Progress Rd
513-859-3681
- OK Oklahoma City
Tektronix Inc
800 NE 63
405-848-3361
- OR Tigard
Tektronix Inc
7000 SW Hampton St
503-620-9100
- PA Blue Bell
Tektronix Inc
1720 Walnut Rd
215-244-9800
- PA Pittsburgh
Tektronix Inc
1051 Brinton Rd
412-244-9800
- TN Knoxville
Tektronix Inc
9041 Executive Park Dr
615-690-6422
- TX Dallas
Tektronix Inc
Box 344529
214-233-7791
- TX Houston
Tektronix Inc
5755 Bonhomme
713-933-3000
- TX San Antonio
Tektronix Inc
3311 Roselawn
512-434-4334
- UT Salt Lake City
Tektronix Inc
300 Mercer Way
801-486-1091
- VA Newport News
Tektronix Inc
606 Denbigh Blvd
804-874-0099
- WA Kent
Tektronix Inc
19026 72 Ave S
206-575-0180
- ALGERIA
Guernsey
Tektronix Ltd
Box 36
61.50.24
- ARGENTINA
Buenos Aires
Coasin SA
Virrey del Pino 4071
52-3185
- AUSTRALIA
North Ryde, Sydney
Tektronix Australia Pty Ltd
80 Waterloo Rd
888-7066
- AUSTRIA
Vienna
Rohde & Schwarz-Tektronix Ges
mbH
Sonnleithnergasse 20
62 61 41
- BELGIUM
Bruxelles
Tektronix vn/sa
Rue De La Fusee NR 100
02/720.80.20
- BOLIVIA
La Paz
Coasin Bolivia SRI
Avenida 6 de Agosto 2300
40962
- BRAZIL
Sao Paulo
Tektronix Industria e Comercio
Ltda
Rua Franz Schubert 59
813-3011
- CHILE
Santiago
Equipos Industriales SACI
Moneda 812
716-882
- COLOMBIA
Bogota
Selectronica Ltda
Apartado Aereo 25124
632874
- COSTA RICA
San Jose
Electo-Impex SA
Apartado 620
21-59-54
- DENMARK
Herlev
Tektronix A/S
Herlev Hovedgade 119
02 84 56 2
- ECUADOR
Quito
Proteco Coasin Cia Ltda
Ave 6 de Diciembre 865 y Roca
52-679
- EGYPT (UAR)
Cairo
Giza Systems Engineering Co
4 El-Hesin St
841200
- EL SALVADOR
San Salvador
Electronica Cuscatleca SA de CV
21 Av Nte y Calle Acre 1268
22-0297
- ENGLAND
Harpenden
Tektronix UK Ltd
36-38 Coldharbour Ln
63141
- FINLAND
Helsinki
Tektronix O/Y
Larin Kyostin tie 4
90-722 400
- FRANCE
Orsay
Tektronix
Z I Courtaboeuf B P 13
907 78 27
- GERMANY, WEST
1000 Berlin-West 10
Rohde & Schwarz Handels Ges mbH
030 3 41 40 36
- GREECE
Athens
Marios Dalleggio Representations
2 Alopekis St
710.669
- HONG KONG
Causeway Bay
Gilman & Co Ltd
280 Gloucester Rd
5-794266
- ICELAND
Reykjavik
Kristjan O Skagfjord Ltd
Box 906
24120
- INDIA
Bombay
Hinditron Services Private Ltd
69-A L lagmohandas Marg
81 13 16/81 53 44
- INDONESIA
Jakarta
P T Dwi Tunggal Jaya Sakti
Box 4435
367390-9
- IRAN
Tehran
Irantronics Company Ltd
20 Salm Rd
828294
- IRAQ
Baghdad
Al Manar Engineering WLL
Jumhuria St
60992

ISRAEL

Tel Aviv
Eastronics Ltd
11 Rozanis St
475151

ITALY

Milano
Silverstar Spa Ltd
Via del Gracchi 20
4996

IVORY COAST

Abidjan
SITEL
Blvd Giscard D'Estaing-Carrefour
353600

JAPAN

Tokyo
Sony/Tektronix Corp
9-31 Kitashinagawa-5
448-4851

JORDAN

Amman
TAREQ Scientific Bureau
Box 35055
42333

KENYA

Nairobi
Engineering & Sales Co Ltd
Box 46658
26815

KOREA REP (REP)

Seoul
M-C International Ltd
22-2 Hakdong Kangnam-Ku
56 6131

KUWAIT

TAREQ Co
Box Safat 20506
436100

LEBANON

Beirut
Projects SAL
Box 5281
251680

MALAYSIA FED OF

Petaling Jaya
Mecomb Malaysia Sdn Bhd
2 Lorong 13/6A
773455

MEXICO

Mexico
Tecnicos Argostal SA
Av Jalisco 180
515-85-80

MOROCCO

Casablanca
SCRM
29 BD Giradot
27 69 11

NETHERLANDS

Badhoevedorp
Tektronix Holland NV
Meidoornweg 2
02968-1456

NEW ZEALAND

Auckland
W & K McLean Ltd
103-105 Felton Mathew Ave
587-037

NORWAY

Oslo
Tektronix Norge A/S
Lorenfareit 1
02-212855

PAKISTAN

Karachi
Pak-Land Corp
Iqbal Rd
437315

PANAMA

Panama
Executive Marketing Corp
Apartado 4929

PERU

Lima
Importaciones y Representaciones
Electronicas SA
Avda FD Roosevelt 105
28-86-50

PHILIPPINES

Makati Rizal
Philippine Electronic Industries
Inc
8755 Paseo de Roxas
87-99-26

PORTUGAL

Lisbon
Equipamentos de Laboratorio Lda
Box 1100
97 65 51

SAUDI ARABIA

Riyadh
Electronic Equipment Mktg Ltd
Box 3750
32700/37023

SINGAPORE

Singapore
Mechanical & Combustion Eng Co
Ptd Ltd
10-12 Jalan Kilang
647151

SOUTH AFRICA

Transvaal
Protea Physical & Nuclear
Instrumentation
746 Sixth St
27 11 786-3647

SPAIN

Madrid
Tektroni Espanola SA
c/Condesa de Venadito
41 4041011

SUDAN

Khartoum
Cine & Photo Supply Co
Box 393
75162

SURINAM

Paramaribo
Wong Sang Tsoi & Co
20-24 Dominestraat
73511

SWEDEN

S-171 04 Solna
Tektronix AB
08/83 00 80

SWITZERLAND

CH-6301 Zug
Tektronix International AG
042 21 91.92

SYRIA

Damascus
General Trading Co
Box 798
114807

TAIWAN

Taipei
Heighten Trading Co Ltd
16 Nanking E Rd
551-916

THAILAND

Bangkok
G Simon Radio Co Ltd
30 Patpong Ave
30991-3

TUNISIA

Tunis
El Eslek
3 Rue de Vesoul
244372

TURKEY

Istanbul
Erkman Elektronik Aletler
Necatibey Caddesi 92/3
44 15 46/44 76 51

URUGUAY

Montevideo
Coasin Uruguay SR1
Casilla de Correo 1400
91-79-78

VENEZUELA

Caracas
Equilab CA
Avda Romulo Gallegos
283-1166

ZAMBIA

Lusaka
Baird and Tatlock Ltd
Chandwe Musonda Rd
75315/6

TELAUTOGRAPH CORPORATION

8700 Bellanca Ave
Los Angeles, CA 90045
213-641-3690
Contact: R Biersch
■ Products & Services
Facsimile terminals
Telescriber
Paper for terminals

Branch Sales Offices:

FL North Miami
Telaugraph Corp
1626 NE 148 St
305-940-0423

GA Atlanta
Telaugraph Corp
6855 Jimmy Carter Blvd
404-447-8440

IL Chicago
Telaugraph Corp
1921 N Harlem
312-622-7111

MI Detroit
Telaugraph Corp
431 Stephenson Hwy
313-564-5520

NJ Clifton
Telaugraph Corp
57 Lakeview Av
201-772-2740

TX Houston
Telaugraph Corp
3511 Pinemont
713-688-9505

TELCON INDUSTRIES

5701 NW 31st Ave
Fort Lauderdale, FL 33309
305-971-2250
Contact: Sydney S Simon
■ Products & Services
Data entry terminals, portable

Branch Sales Offices:

CA Sunnyvale
Talus Corp
292 Commercial St
408-738-4422

IL Northbrook
Marketch Assoc
3677 Woodhead
312-291-1220

TELECOMMUNICATIONS TECHNIQUES CORP

112 Frederick Ave
Rockville, MD 20850
301-340-8443
Contact: Joseph Sciulli
■ Products & Services
Line drivers
Data content monitors
Electrical-parameters test equipment
Tech control centers
Digitized voice processors
Data jacks and plugs
Pulse and signal regenerators
Select. & transfer equip., monitor & test
switch, equip.
Select. & transfer equip., patch. equip.
Switches, data communications, automatic
Switches, data communications, manual

Branch Sales Offices:

CA Aptos
Lencom Assoc
1701 Cox Rd
408-684-0366
CT Fairfield
Higgins Ind Inc
33 Old Academy Rd
203-259-2113
MD Silver Spring
Spectro Systems Corp
11141 Georgia Av
301-949-8261

FRANCE

Rungis Cedex
Dynatech Data Comm Ltd
Silié 131 94523
1-687-24-72

REPUBLIC OF CHINA

Taipei, Taiwan
Penz Trading Co
Box 7-240
519-271-0180

TELECOMMUNICATIONS TECHNOLOGY INC

555 Del Rey Ave
Sunnyvale, CA 94086
408-735-8080
Contact: Glen Patterson
■ Products & Services
Electrical-parameters test equipment
Remote job entry terminals

Branch Sales Offices:

CA Sunnyvale
Telecommunications Tech
555 Del Rey Ave
408-735-8080
CA Santa Fe Springs
Kennedy Eng Co
Box 2667
213-868-9965
CO Denver
Lindberg Co
6140 E Evans Ave
303-758-9033
DC Washington
Powell-Pendergraph
7979 Old Georgetown Rd
301-656-4535
GA Marietta
Telecommunications Tech
2967 Christopher Ct
404-973-4794

IL Plainfield
Telecommunications Tech
118 Buttercup Ct
312-964-2873

IL Schaumburg
Kenneth W Meyers Co
1242 Remington Rd
312-882-4808

TX Dallas
Telecommunications Tech
12250 Abrams Rd 1115
214-238-8130

WA Bellevue
Arva Hudson
Box 1512
206-455-0773

WA Longview
Telecommunications Tech
3 Woodthrush
206-636-0445

WI Tomah
Telecommunications Tech
602 Packard St
608-785-1490

ONTARIO, CANADA

Scarborough
ROR Assoc Ltd
21 Rolark Dr
416-291-7121

ONTARIO, CANADA

Toronto
Telecommunications Tech
95 Duplex Ave
416-486-5160

To find out who makes a
certain product, turn to
**Products & Services Direc-
tory, page 5.**

TELEDYNE INET MARKETING DEPT

2750 West Lomita Blvd
Torrance, CA 90509
213-325-5040
Contact: Cal Felicetti
■ Products & Services
Power supplies, uninterruptible; line
correctors, etc.

Branch Sales Offices:

NY NYC
Teledyne Inet
420 Lexington Av
212-243-3194

BELGIUM

Brussels
Teledyne Inet
181 Chaussee de la Hulpe
02-673-9988

TELEFILE COMPUTER PROD INC

8841 N 7 St
Phoenix, AZ 85020
714-557-6660
Contact: Bill Krauss
■ Products & Services
Front-end processors
Minicomputers
Add-on main memory
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Tape, magnetic
Tape drives, magnetic
Maintenance organizations

Branch Sales Offices:

AZ Phoenix
Telefile Comp Prod Inc
4607-A N 12 St
602-264-1941
CA Irvine
Telefile Comp Prod Inc
17131 Daimler St
714-557-6660
NY Hicksville
Telefile Comp Prod Inc
81 N Broadway
516-822-3241
OH Dayton
Telefile Comp Prod Inc
3832 Kettering Blvd
513-294-5151
PA Philadelphia
Telefile Comp Prod Inc
10 Penn 95 Plaza, Route
332-Penns Trail
215-968-4554
TX Dallas
Telefile Comp Prod Inc
Box 401262
214-272-3222
134 DENMARK
Kobenhaven
Sun-Data
Finsensvej 39A
399111

TELEPROCESSING PRODUCTS INC

4565 E Industrial Way; Bldg 7
Simi Valley, CA 93063
213-478-8988
Contact: John Scott
■ Products & Services
Modem sharing units
Port selectors
Port sharing units
Line drivers
MIL 188C adapters
Code converters
Modem eliminators
Protocol converters
Select. & transfer equip., reconfig. equip.

Branch Sales Offices:

CA Oakland
Persons & Assoc
8105 Edgewater Dr
415-569-6421
CO Littleton
Cropley Inc
2275 E Arapahoe Rd
303-794-4231
CT Westport
T H Maguire & Assoc Inc
Box 666
710-226-4281
IL Chicago
HH Sales
2007 N Sedgwick
312-841-8250
IN Indianapolis
HH Sales
3232 Blue Bell Ln
317-297-1876
MA Danvers
John Melason & Assoc
39 Pine St
617-774-1220
MI Farmington Hills
Data Specifications Corp
31700 W 12 Mi Rd
313-553-9111

NJ Bellmawr
Applied Delta Sys
Kor Center E; Box 425
609-931-3100

NY Ilion
Annese & Assoc
60 Pine St
315-895-7469

NY Great Neck
Harvey Krasner Assoc
33 Great Neck Rd
516-487-0690

NY Rochester
Annese & Assoc Inc
100 Berwick Rd
716-654-9132

OH Columbus
Data Specifications Corp
6230 Busch Blvd
614-885-6682

OH Cleveland
Data Specifications Corp
19120 Detroit Rd
216-333-6740

PA Pittsburgh
Applied Delta Sys
16 EW Dr; Box 15175
412-931-1960

TX Dallas
Computer Assoc
209 Empire Cntr; 8383 Stemmons
Frwy
214-634-1320

WA Seattle
SJI Corp
626 S Alaska St
206-624-9020

WI Brookfield
Delta Comms Inc
14640 W Greenfield Av
414-784-3663

TELERAY DIV
RESEARCH INC
PO Box 24064
Minneapolis, MN 55424
612-941-3300
Contact: Richard Deegan
■ Products & Services
Disc drives, floppy
Intelligent (programmable) terminals
Video data terminals (KSR)
Video data terminals (RO)
Maintenance organizations

Branch Sales Offices:

AL Huntsville
Pen Tech Assoc
3322 Memorial Pkwy
205-881-9298

CA Long Beach
Edwards Assoc
Box 4591
213-597-1231

CA Torrance
Edwards Assoc
2808 Oregon Ct
213-328-9770

CA Irvine
Edwards Assoc
17722 Palmento Way
714-552-7850

CA San Diego
Edwards Assoc
1735 Archer
714-273-4771

CO Golden
J F Hurlbut Co
622 Gardenia Ct
303-279-7796

FL Pen Tech Assoc
111 S Maitland
305-645-3444

FL Deerfield Beach
Pen Tech Assoc
201 S 15 Ter
305-421-4989

GA Marietta
Pen Tech Assoc
Cherokee Ctr
404-424-1931

HI Honolulu
Western Union
190 S King St
808-523-1326

IL Oak Brook
Systems Consulting
1200 Harger Rd
312-655-0040

MD Silver Spring
Computer Complements
1110 Fidler La
301-589-2802

MA Lowell
S & S Electronics
80 Stedman St
617-459-2578

MI Southfield
Data Tron
17250 W 12 Mile Rd
313-354-6421

MN Brooklyn Park
Tele-Terminals
7216 Boone Ave N
612-535-5330

NJ Fort Lee
Hansen & Hughes
2175 Lemoine Ave
201-944-1600

NJ Ridgewood
Hansen & Hughes
Box 806
201-652-7055

NY Saratoga Springs
S & S Electronics
77 Van Dam St
518-587-2313

NY Penfield
Western NY Computing
Box 56
716-381-4120

NC Highpoint
Pen Tech Assoc
1202 E Chester
919-883-9125

OH Wickliffe
Data Tron
3014 Euclid Ave
216-585-8421

OH Dayton
Data Tron
Box 24207
513-223-8421

OR Portland
Pacific NW Electronics
2035 SW 58
503-292-3505

PA Monroeville
Data Tron
Box 67
412-243-8421

UT Salt Lake City
J F Hurlbut Co
3605 S Bannock
801-969-4034

WA Bellevue
Pacific NW Electronics
14264 SE Eastgate Way
206-641-6444

BRITISH COLUMBIA, CANADA
Mt Waverley
Anderson Digital Equipment Pty
Box 322
03-543-2076

ARGENTINA
Buenos Aires
ARO-SAIC
Casilla de Correo 5681
39-8278-34-1586

BRAZIL
Sao Paulo
AROTEC
Av Pacaembu 811
262-3458

COLOMBIA
Bogata
Distecnica Ltda
Carrera 9a, No 80-15; Apartado
Aereo
559041

GUATEMALA
Guatemala City
Sistemas Electronicos;
Centroamericanos SA
6A Av "A" 2-22
63842

INDIA
Bombay
Universal R F Equipment
29-31 St Mary's Rd
376673

ISRAEL
Tel-Avia
STG International
10 Huberman St
53459

MEXICO
Mexico
InteleX SA
P Antonio de los Santos 70
516-99-70

REPUBLIC OF CHINA
Taipei, Taiwan
Suntown and Co
Box 22986
752-9006

SOUTH AFRICA
Silverton
So African Tech Ind
292 Mundt St
83-2281

SWEDEN
Solna
Ad-Teknik AB
Box 9100
08/83-69-20

VENEZUELA
Caracas
Digi-Data CA
Box 70657
387357

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when it breaks?
Turn to **UpDate Service Card**,
page 201.

TELESYSTEMS NETWORK INC
410 N Michigan Ave
Chicago, IL 60611
312-329-0700
Advertising page 58
Contact: Donald Young
■ Products & Services
Code converters
Computer/communications interfaces
Voice adapters

TELETYPE CORP

5555 Touhy Ave
Skokie, IL 60077
312-982-2000
Contact: Roger M Dersch

■ **Products & Services**

Cartridge drives
Tape punch/reader, paper
Batch terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teletypewriters
Video data terminals (KSR)
Data communications consultants
Maintenance organizations

TELEVIDEO INC

3190 Coronado Dr
Santa Clara, CA 95051
408-246-5428

Contact: Jill Campbell

■ **Products & Services**
Video data terminals (KSR)

Branch Sales Offices:

- AL** Huntsville
Gentry Assoc Inc
2109 W Clinton Ave
205-534-9771
- CA** Los Angeles
Consolidated Data Terminals
6151 W Century Blvd
213-670-0400
- CA** Oakland
Consolidated Data Terminals
7850 Edgewater Dr
415-638-1222
- CA** Fountain Valley
MQI Computer Products
18381 Bandilier Cir
714-751-2005
- CA** Sunnyvale
MQI Computer Products
1172-B Aster St
408-984-1919
- CA** Sunnyvale
R C Data
1010 Morse Ave
408-745-7410
- FL** Orlando
Gentry Assoc Inc
550 N Bumby Ave
305-894-4401
- GA** Atlanta
Gentry Assoc Inc
16 Perimeter Park Dr
404-455-1206
- IL** Rosemont
Information Systems
9806 W Farragut Ave
312-671-7780
- LA** Gretna
Gentry Assoc
1799 Stumpf Blvd
504-367-3975
- MD**
- MD** Computer Products Supply Co
Gaithersburg
Computer Products Supply Co
4 Professional Dr
301-840-9524
- MA** Fairhaven
Data Brain Inc
11 Ridgecrest Ave
617-994-3944

- MA** Cambridge
Media Systems
139 First St
617-876-0164
- NJ** Kenilworth
Star Technical Sales
131 S 31 St
201-245-7827
- NC** Burlington
Gentry Assoc Inc
428 Alamance Rd
919-227-3639
- OH** Cleveland
Innovative Digital Equipment
28889 Chagrin Blvd
216-831-6321
- TX** Richardson
Data Applications Corp
1300 E Arapaho Rd
214-231-4846
- TX** Houston
Data Applications Corp
5401 Mitchelldale
713-686-8413
- TX** San Antonio
Data Applications Corp
4538 Centerview Dr
512-732-7176
- UT** Salt Lake City
Terminal Specialties Inc
3999 S Main
801-262-7100
- WA** Redmond
Consolidated Data Terminals
14960 NE 31 Cir
206-883-0100
- WI** Milwaukee
Information Systems
Box 20710
414-963-1221

TELEX MARKETING COMPANY

8921 Lindblade St
Culver City, CA 90230
213-204-4400
Contact: Richard Myers Jr
■ **Products & Services**
Cartridges
Cassettes
Tape, magnetic
Tape, paper
Tape punch/reader, paper
Remote line printers
Teletypewriters
Paper for terminals
Timesharing/service bureaus

TEL-TEX INC

2825 W 11
Houston, TX 77008
713-868-6000
Contact: Joseph Scartaccini
■ **Products & Services**
Modem sharing units
Acoustic couplers
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Cassettes
Discs, floppy
Tape, paper
Tape punch/reader, paper
Data entry terminals, portable
Intelligent (programmable) terminals
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Word processors, communicating

Furniture, cabinets, terminal enclosures
Paper for terminals
Ribbons and supplies for terminals and printers

Lease and resale organizations
Maintenance organizations
Used equipment

Branch Sales Offices:

- OK** Oklahoma City
Tel Tex Inc
1117 S Cornell Pkwy
405-947-3797
- OK** Tulsa
Tel Tex Inc
5553 S Peoria
918-742-9673
- TX** Richardson
Tel Tex Inc
709 Lingco
214-231-8077
- TX** Austin
Tel Tex Inc
8900 Shoal Creek
512-451-8201
- MEXICO**
Mexico City
Datos en Lineas SA
Cantu 9-105 Colonia Anzures
905-531-0329

TELTONE CORP

10801 120th/NE
Kirkland, WA 98033
206-827-9626
Contact: Mike Millikin
■ **Products & Services**
Multiplexers, intelligent
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed

TERMIFLEX CORP

17 Airport Rd
Nashua, NH 03060
603-889-3883
Contact: Peter Clark
■ **Products & Services**
Digital service units
Data entry terminals, portable
Intelligent (programmable) terminals
Interactive systems
Remote job entry terminals
Data jacks and plugs
Data com. softw, independ. softw houses
Data com. softw, intel. term. vendors

Branch Sales Offices:

- AL** Huntsville
James L Highsmith & Co
Holiday Office Center
205-881-3294
- CA** Sherman Oaks
Electronic Marketing Specialist
14006 Ventura Blvd
213-990-4244
- CA** Sunnyvale
Electronic Marketing Specialist
599 N Mathilda Av
408-245-9291
- FL** Boca Raton
James L Highsmith & Co
4190 NW Oak Circle
305-368-9194
- FL** Orlando
James L Highsmith & Co
2545 Industrial Blvd
305-293-5202
- MD** Chevy Chase
Termiflex Corp
5321 Williard Av
301-654-0473

NC Charlotte
James L Highsmith & Co
3733 Monroe Rd
704-333-7743

ENGLAND
Surrey
Herbert Numerical Controls Ltd
Boundary Rd; Woking
04862-66576

GERMANY, WEST
Frankfurt
Digital Computer Peripherie GmbH
Praunheimer Landstrabe 32
0611-762055

JAPAN
Tokyo
Internix Inc
Naito Bldg; 7-2-8 Nishishinjuku,
Shinjuku-ku
369-1101

TERMINAL DATA CORP
11878 Coakley Circle
Rockville, MD 20852
301-881-7655
Contact: Attn: Leonard Teitelbaum
■ Products & Services
Electrical-parameters test equipment
DDP systems
Cartridges
Disc drives, floppy
Tape, magnetic
Tape, paper
Intelligent (programmable) terminals
Video data terminals (KSR)
Video data terminals (RO)
Cables, electrical prefabricated extender
Code converters
Lease and resale organizations
Maintenance organizations
Used equipment

Branch Sales Offices:

IL Addison
R Edward Stemmler
17 W 480 Lake St
312-279-2440

NJ Wayne
R A Sales
30 Galeo Dr
201-256-8500

OH Medina
McShane Inc
Box 523
216-725-4568

ONTARIO, CANADA
Ottawa
L Albert Assoc
2264 Stevenage Dr
613-737-5941

TERMINAL RENTALS INC
PO Box 1484
Orange, CA 92668
714-832-2414
Contact: Al Sweeney
■ Products & Services
Acoustic couplers
Cassettes
Intelligent (programmable) terminals
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Paper for terminals
Lease and resale organizations
Maintenance organizations

Branch Sales Offices:

AZ Phoenix
Terminal Rentals Inc
2430 S 20 St
602-254-2871

CA Tustin
Terminal Rentals Inc
2722 Walnut Ave
714-832-2414

CA San Jose
Terminal Rentals Inc
2444 Moorpark Ave
408-292-9915

TERMINAL SPECIALTIES INC
3999 S Main St., Suite S7
Salt Lake City, UT 84107
801-262-7100
Contact: Jack Davis
■ Products & Services
Acoustic couplers
Line drivers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Disc drives, floppy
Bar code readers
Batch terminals
Data entry terminals, portable
Graphic display terminals
Intelligent (programmable) terminals
Interactive systems
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Cables, electrical prefabricated extender
Data access arrangement devices
Data com. softw. intel. term. vendors

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

TERMINAL SYSTEMS INC
11300 Hartland St
N Hollywood, CA 91605
213-769-6772
Contact: Christopher Cloud
■ Products & Services
Acoustic couplers
Modems, voice-grade, low-speed
Cassettes
Cassette drives
Disc drives, floppy
Discs, floppy
Data entry terminals, portable
Remote job entry terminals
Teletypewriters
Video data terminals (KSR)
Error Controllers
Paper for terminals
Ribbons and supplies for terminals and
printers
Data communications consultants
Maintenance organizations
Used equipment

Branch Sales Offices:

CA Foster City
Terminal Systems Inc
1161-F Chess Dr
415-573-7723

CA Orange
Terminal Systems Inc
1603 N O'Donnell Wy
714-738-4444

TERRACOM
9020 Balboa Ave.
San Diego, CA 92123
714-278-4100
Contact: Bruce Jennings
■ Products & Services
Multiplexers, time division
Earth stations
Microwave/Laser Systems, Private

Want even more information
on products?
Turn to **UpDate Service Card,**
page 201.

TESDATA SYSTEMS CORP
7921 Jones Branch Dr
McLean, VA 22102
703-827-4000
Contact: Ms Carol A Koschak
■ Products & Services
Electrical-parameters test equipment

Branch Sales Offices:

CA San Mateo
Tesdata Systems Corp
1720 So Amphlett Blvd
415-573-6022

CA El Segundo
Tesdata Systems Corp
999 No Sepulveda Blvd
213-640-1155

IL Deerfield
Tesdata Systems Corp
2275 Halfday Rd
312-948-8700

MI Southfield
Tesdata Systems Corp
27777 Franklin Rd
313-352-2890

NJ Englewood Cliffs
Tesdata Systems Corp
333 Sylvan Ave
201-871-1300

RI Providence
Tesdata Systems Corp
203 S Main St
401-351-1803

TX Houston
Tesdata Systems Corp
9219 Katy Frwy
713-461-4606

VA McLean
Tesdata Systems Corp
7921 Jones Branch Dr
703-827-4144

ENGLAND
Slough
Tesdata Ltd
Tesdata House; Hatfield Rd
011-44-753-71961

FRANCE
ISE Paris
Tesdata SA
104 rue de Castanary
533-7300

GERMANY, WEST
Frankfurt
Tesdata GmbH
Am Lindenbaum 24
49-611-520181

TEXAS INSTRUMENTS

DIG SYS DIV

PO Box 1444
Houston, TX 77001
713-937-2000
Contact: Cliff Silver
■ Products & Services
Front-end processors
Minicomputers
DDP systems
Cartridge drives
Cassette drives
Disc drives, floppy
Tape drives, magnetic
Data entry terminals, portable
Intelligent (programmable) terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

AL Birmingham
Texas Instruments Inc
152C W Valley Ave
205-942-3337

AZ Phoenix
Texas Instruments Inc
8102 N 23 Ave
602-249-1313

CA Costa Mesa
Texas Instruments Inc
3186 Airway
714-540-7311

CA El Segundo
Texas Instruments Inc
831 S Douglas St
213-973-2571

CA Sacramento
Texas Instruments Inc
1900 Point West Way
916-929-0961

CA San Diego
Texas Instruments Inc
4333 Viewridge Ave
714-278-9600

CA San Francisco
Texas Instruments Inc
100 California St
415-781-9470

CA Sunnyvale
Texas Instruments Inc
776 Palomar Ave
408-732-1840

CO Denver
Texas Instruments Inc
9725 E Hampden Ave
303-751-1780

CT Hamden
Texas Instruments Inc
2405 Whitney Ave
203-281-0074

FL Fort Lauderdale
Texas Instruments Inc
4600 W Commercial Blvd
305-733-4660

FL Winter Park
Texas Instruments Inc
1850 Lee Rd
305-644-3535

GA Atlanta
Texas Instruments Inc
3300 Northeast Exprwy
404-452-4600

HI Honolulu
Texas Instruments Inc
1600 Kapiolani Blvd
808-955-2617

IL Arlington Heights
Texas Instruments Inc
515 W Algonquin Rd
312-640-2900

IL Peoria
Texas Instruments Inc
6500 N University Pl
309-692-6016

IN Indianapolis
Texas Instruments Inc
5726 Professional Cir
317-248-8555

IN Fort Wayne
Texas Instruments Inc
2020 Inwood Dr
219-424-5174

LA Baton Rouge
Texas Instruments Inc
9052 Shady Bluff
504-261-2329

MA Waltham
Texas Instruments Inc
504 Totten Pond Rd
617-890-7400

MI Southfield
Texas Instruments Inc
24293 Telegraph Rd
313-353-0830

MN Edina
Texas Instruments Inc
7625 Parklawn Ave
612-830-1600

MO Kansas City
Texas Instruments Inc
8080 Ward Pkwy
816-523-2500

MO St Louis
Texas Instruments Inc
2368 Schuetz
314-569-0801

NE Omaha
Texas Instruments Inc
407 N 17 St
402-330-2510

NJ Clark
Texas Instruments Inc
1245 Westfield Ave
201-574-9800

NY Albany
Texas Instruments Inc
125 Wolf Rd
518-459-5260

NY Melville
Texas Instruments Inc
1 Huntington Quadrangle
516-752-1555

NY New York
Texas Instruments Inc
1270 Avenue of the Americas
212-246-6165

NY Rochester
Texas Instruments Inc
1210 Jefferson Rd
716-461-1800

NC Charlotte
Texas Instruments Inc
1 Woodlawn Green
704-527-0930

OH Cleveland
Texas Instruments Inc
28790 Chagrin Blvd
216-464-2990

OH Dayton
Texas Instruments Inc
4124 Linden Ave
513-258-3877

OK Tulsa
Texas Instruments Inc
3105 E Skelley Dr
918-749-9546

OR Beaverton
Texas Instruments Inc
10700 SW Beaverton Hwy
503-641-7880

PA Coraopolis
Texas Instruments Inc
420 Rouser Rd
412-771-8550

PA Ft Washington
Texas Instruments Inc
575 Virginia Dr
215-628-3434

TN Brentwood
Texas Instruments Inc
2 Maryland Farm
615-373-5190

TN Memphis
Texas Instruments Inc
2600 Nonconah Blvd
901-345-3393

TX Dallas
Texas Instruments Inc
8001 Stemmons Exprwy;M/S 3108
214-689-4460

TX Houston
Texas Instruments Inc
9900 Southwest Frwy
713-776-6577

TX San Antonio
Texas Instruments Inc
1938 Northeast Loop 410
512-828-9101

UT Salt Lake City
Texas Instruments Inc
3672 W 2100 So
801-973-6310

VA Arlington
Texas Instruments Inc
1745 Jefferson Davis Hwy
703-553-2200

VA Richmond
Texas Instruments Inc
2737 McRae Rd
804-320-5802

WA Bellevue
Texas Instruments Inc
700 112 St NE
206-455-1711

WI Brookfield
Texas Instruments Inc
205 Bishops Way
414-784-1323

BRITISH COLUMBIA, CANADA
Vancouver BC
Texas Instruments Inc
10451 Shellbridge Way
604-278-4871

ONTARIO, CANADA
Ottawa ON
Texas Instruments Inc
436 MacLaren St
613-233-1177

ONTARIO, CANADA
Richmond Hill ON
Texas Instruments Inc
280 Centre St E
416-884-9181

QUEBEC, CANADA
St Laurent
Texas Instruments Inc
945 McCaffrey
514-341-5224

ARGENTINA
Buenos Aires
Texas Instruments Argentina
SAICF
1000-Correo Central
7481141

AUSTRALIA
Sydney
Texas Instruments Ltd
Box 106 NSW 2113
03 887-1122

AUSTRALIA
Victoria
Texas Instruments Australia Ltd
60 Albert Rd
03 6995788

AUSTRIA
A-1030 Vienna
Texas Instruments Gsmh
Rennweg 17
724186

BELGIUM
Bruxelles 1130
Texas Instruments Belgium SA
Rue de la Fusée
1/720.80.00

DENMARK
Copenhagen
Texas Instruments A/S
2730 Herlev
01/91.74.00

ENGLAND
Bedford
Texas Instruments Ltd
Manton Ln; M/S 4223
0234-67466

ENGLAND
Cheshire
Texas Instruments Ltd
Battersea Rd
061-442-8448

ENGLAND
Slough
Texas Instruments Ltd
186 High St
0753-33411

FINLAND
Helsinki
Texas Instruments Finland
Box 53
90-408 300

FRANCE
Lyon
Texas Instruments France
30-31 Quai Rambaud
78 42 78 50

FRANCE
Paris
Texas Instruments France
92350 Le Plessis Robinson
1 630-2343

FRANCE
06270 Villeneuve-Loubet; Nice
Texas Instruments France
Boite Postale 5
93 20.01.01

GERMANY, WEST
Germany
Texas Instruments Deutschland
GmbH
111 Hagen 43
0201/23 35 51

GERMANY, WEST
Germany
Texas Instruments Deutschland
GmbH
6236 Eschborn
06196/4096

GERMANY, WEST
Germany
Texas Instruments Deutschland
GmbH
8050 Freising
08161/80-1

GERMANY, WEST
2000 Hamburg
Texas Instruments Deutschland
GmbH
040/2201156

GERMANY, WEST
8000 Munchen 81
Texas Instruments Deutschland
GmbH
089/32 50 11

ITALY
Milan
Texas Instruments Italia SPA
20093 Cologno Monzese/Milano
02 2532451

ITALY
Turin
Texas Instruments Italia SPA
10100 Torino
011 832276

ITALY
Roma
Texas Instruments Italia SPA
Via Salaria 1319
06 6917157

JAPAN
Minato-Ku
Texas Instruments Inc
3-6-12 Kita-Aoyama
03 498-2111

JAPAN
Yodogawa-Ku Osaka 532
Texas Instruments Asia Ltd
9-2 5-Chome Nishi Nakajima-Cho
06-304-9300

NETHERLANDS
1180 G Amstelveen
Texas Instruments Holland BV
20/47.33.91

NORWAY
Oslo 1
Texas Instruments Norway A/S
Kr Augusts gt 13
02 206040

SINGAPORE
Republic of Singapore
Texas Instruments Asia Ltd
990 Bendemeer Rd
258-1122

SPAIN
Barcelona
Texas Instruments Espana SA
C/Balmes 89-91 -2 4
03/2152950

SWEDEN
S-100 54 Stockholm
Texas Instruments Sweden AB
08/235480

SWITZERLAND
8040 Zurich
Texas Instruments Switzerland
Aargauerstrasse 250
01643455

3M COMPANY
STATIC CONTROL DIV
3M Center-223-2SW
St Paul, MN 55101
612-733-9420
Contact: Robert Kunz

THREE PHOENIX CO
21639 N 14 Ave
Phoenix, AZ 85029
602-242-6300
■ Products & Services
Telecommunications monitor
Cartridges
Cartridge drives
Tape drives, magnetic
Data entry terminals, portable

Branch Sales Offices:

AZ Mesa
Par Assoc South
932 E Harmony Ave
602-892-9711

CA Van Nuys
Edward Momjian & Assoc
Box 3762
213-764-4891

CA Saratoga
Manufacturing Prod Spec
20521 Debbie Ln
408-867-6455

CA Cupertino
Manufacturing Prod Spec
2380 Town Center Ln
408-996-7236

FL Sarasota
William J Irvine Co
2146 Thirteenth Dr
813-955-9656

IL Chicago
Kennedy Engineering Inc
6713 N Oliphant Ave
312-631-8283

MA Marlboro
L & M Sales Inc
4 Glen St
617-481-1910

MN Minneapolis
Engineering Products Assoc
4316 Upton Ave S
612-925-1883

NJ Ridgefield
Rical Assoc
845 Broad Ave
201-945-5250/1

NM Albuquerque
Par Assoc South
2610 San Mateo NE
505-881-5000

NC High Point
William J Irvine Co
1029 Canterling Rd
919-889-5606

OH Dayton
Hocker Assoc Inc
1400 Devereux Dr
513-298-8638

OH Olmstead
Hocker Assoc Inc
6613 Nancy Dr
216-734-4433

PA Berwyn
Tucker Assoc Inc
1018 Derwydd Ln
215-644-0142

TX Dallas
SCI Sales Inc
13771 N Cent'al Expwy
214-234-8072

TX Houston
SCI Sales Inc
1199 Nasa Rd 1
713-488-3728

TIME & SPACE PROCESSING INC
10430 N Tantau Ave
Cupertino, CA 95014
408-996-2200
Contact: Gerard Currie
■ Products & Services
Digitized voice processors
Switches, data communications, automatic
Voice adapters
Voice digitizers
Branch Sales Offices:
FL Orlando
Fred Baetzman
Box 17713
305-295-4817

MI Grand Rapids
Time and Space Processing Inc
3040 Charlevoix SE
616-942-7142

NY New York
Glasgal Communications
521 Fifth Av
212-687-2455

AUSTRALIA
Croydon
Datacraft P&Y Ltd
CNR Croydon & Lincoln Rds
725-5477

ENGLAND
Croydon
Cole Electronics
103 Lansdowne Rd
01-688-6822

FRANCE
Boulogne-Billancourt
Datatel
23 Quai Alphonse le Gallo
01-605-4375

ISRAEL
Tel Aviv
Electis Engr Ltd
12 Bnei Dan Str

ITALY
Milan
CGS Consyst
20070 Segrate Via Fanin
02-213-6551

JAPAN
Tokyo
Rikei Corp
1-18-14 Nishi-Shimbashi-Minato
Ku

NETHERLANDS
The Hague
Koning en Hartman
30 Koperwerf
070-678380

SINGAPORE
Singapore
Racal Elec
Rm 605, Hill St

SWEDEN
Solna
Svea Data Comm
Box 3004, Gardsvagn 10B
08-830870

SWITZERLAND
Zurich
Philips-Telecom
Binstrasse 15
01-442211

Stay up-to-date with new catalog
information and new product
announcements.
Turn to **UpDate Service Card,**
page 201.

TIMEPLEX INC
One Communications Plaza
Rochelle Park, NJ 07662
201-368-1127
Contact: Nancy Connolly
■ Products & Services
Concentrators
Inverse multiplexers
Multiplexers, time division
Multiplexers, intelligent
Multiplexers, group band
Packet processors
Modems, limited distance
Modems, multipoint
Modems, multiport

Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Modems, wideband, half-group band
Modems, wideband, group band
Network management centers
Automatic calling units
Error Controllers

Branch Sales Offices:

AZ Phoenix
PLS Assoc
4001 N 31 Ave
602-279-1531

CA Long Beach
CTI Data Systems Inc
3450 E Spring St
213-426-7375

CA San Diego
CTI Data Systems
8262 Clairemont Mesa Blvd

CA El Granada
DCM Assoc
532 Palma St
415-726-6326

CA Clayton
DCM Assoc
420 Mt Tamalpais Dr
415-798-4991

CO Denver
PLS Assoc
7755 E Quincy Ave
303-773-1218

IN Indianapolis
Data Processing Sciences Corp
6326 N Rucker Rd
317-251-6471

KS Shawnee Mission
Inland Assoc Inc
7975 W 63 St
913-362-2366

KY Louisville
Data Processing Sciences Corp
3715 Bardstown Rd
502-451-0559

MA Danvers
John R Melanson Assoc
39 Pine St
617-774-1220

MI Southfield
Data Processing Sciences Corp
28165 Greenfield Rd
313-557-3164

MN Minneapolis
Delta Communications Systems
8120 Penn Ave S
612-884-0202

MO St Louis
Inland Assoc Inc
13100 Manchester Rd
314-821-3742

NJ Bellmawr
Applied Delta Systems Inc
101 Kor Center E
609-931-3100

NM Albuquerque
PLS Assoc
4300 H Silver Ave SE
505-255-2330

NY Herkimer
Annese Assoc Inc
Box 127
315-895-7469

NY Rochester
Annese Assoc Inc
100 Berwick Rd
716-654-9132

NY Great Neck
Harvey J Krasner Assoc Inc
33 Great Neck Rd
516-487-0690

OH Cincinnati
Data Processing Sciences Corp
2327 Park Ave
513-961-0776

OH Cleveland
Data Processing Sciences Corp
17435 Royalton Rd
216-886-2090

OH Dayton
Data Processing Sciences Corp
3300 S Dixie Ave
513-294-2770

OH Toledo
Data Processing Sciences Corp
3126 Sylvania Ave
419-472-0111

OH Columbus
Data Processing Sciences Corp
6076 Busch Blvd
614-888-8047

PA Pittsburgh
Applied Delta Systems Inc
16 East-West Dr
412-931-1960

TX Houston
Data Applications Corp
1300 E Arapahoe Rd

TX Houston
Data Applications Corp
5401 Mitchelldale
713-686-8413

TX San Antonio
Data Applications Corp
4538 Centerview Dr
512-732-7176

UT Salt Lake City
PLS Assoc
2520 S State St
801-466-8729

VA Arlington
Tiimeplex Inc
2001 Jefferson Davis Hwy
703-21-2420

WA Bellevue
DPM Inc
515 116 Ave
206-453-9082

WI Brookfield
Delta Communications Systems
14640 W Greenfield Ave
414-784-3663

ALBERTA, CANADA
Calgary
Assoc Test Equipment Ltd
4216-12 St NE
413-230-1697

BRITISH COLUMBIA, CANADA
Vancouver
Assoc Test Equipment Ltd
303-1037 W Broadway
604-734-2012

ONTARIO, CANADA
Scarborough
Assoc Test Equipment Ltd
3530 Pharmacy Ave
416-497-2208

ONTARIO, CANADA
Ottawa
Assoc Test Equipment Ltd
1320 Carling Ave
613-728-3717

QUEBEC, CANADA
Montreal
Assoc Test Equipment Ltd
3300 Cavendish Blvd
514-481-7733

**TIMES WIRE & CABLE
DIV OF TIMES FIBER
COMMUNICATIONS INC**

358 Hall Av
Wallingford, CT 06492
203-265-8500
Contact: Jack Barbera
■ Products & Services
Cables, electrical prefabricated extender
Cables, optical fiber

Branch Sales Offices:

- AL** Huntsville
20th Century Mktg
Box 6127, Hertz Skycenter
205-772-9237
- AZ** Scottsdale
Mercury Engineering Sales
Box 3130
602-994-5054
- CA** Pico Rivera
Westrep
9519 Telegraph Rd
213-949-2551
- CO** Denver
Lindberg Co
6140 E Evans Av
303-758-9033
- FL** Ft Lauderdale
CBC Elect
3876 W Commercial Blvd
305-484-7330
- HI** Honolulu
Dougherty Enterprises
1001 Dillingham Blvd
808-847-4144
- IL** Berkeley/Hillside
Balhorn & Roeser
1758 Taft Av
312-449-3900
- KS** Overland Pk
PMA Corp
5750 W 95 St
913-381-0004
- MD** Rockville
Mechtronics Sales Inc
Box 1037
301-340-2130
- MA** Clinton
F J Coleman & Co
Box 241
617-368-0116
- MI** Ferndale
Hilltronics Inc
380 Hilton Rd
313-398-5556
- NY** Syracuse
Electra Sales Corp
104 Pickard Dr
315-455-5783
- NC** Winston-Salem
DGW Inc
Box 5316
919-768-7166
- OH** Cincinnati
Giesting Assoc
3274 Donnybrook Ln
513-521-8800
- PA** Glenside
The Griffin Co
363 Glenside Av
215-646-8383
- TX** Dallas
Ammon & Rizos
255 LBJ Frwy
214-233-5592
- WA** Seattle
Seatronics Inc
515 S Mich St
206-767-6272

ONTARIO, CANADA
Markham
Deskin Sales Corp
77B Steelcase Rd W

**Know the product name? Turn
to Products & Services Direc-
tory, page 5 to find out who
makes it.**

TOPAZ INC
3855 Ruffin Rd
San Diego, CA 92123
714-279-0831
Contact: Ruxton Tucker
■ Products & Services
Power supplies, uninterruptible; line
correctors, etc.

Branch Sales Offices:

- AK** Anchorage
John P Bagoy & Assoc
3210 Rampart Dr
907-274-8531
- CA** Cerritos
Traver Assoc
13153 E Beach St
714-521-0053
- CA** La Jolla
Wheelock Assoc
Box 328
714-454-3473
- CA** Sunnyvale
Lee Allen Assoc
540 Weddell Dr
408-734-2100
- CA** Hacienda Heights
Denzil Merrill
14965 Ederidge Dr
213-696-1455
- GA** Orlando
Genry Assoc
550 North Bumby Ave
305-894-4401
- HI** Honolulu
Industrial Electronics
Box 125
808-533-6095
- IL** Schaumburg
Carvel Engineering & Sales
870 E Higgins Rd
312-885-8800
- KS** Shawnee
Atech
10704 W 52 Cir
314-441-5010
- MI** Farmington Hills
Carter McCormick & Pierce
23995 Freeway Park Dr
313-477-7700
- MN** Minneapolis
Magtronics
3025 Harbor La
612-553-1051
- NH** Nashua
Power Conversion Systems
92 Main St
603-889-8262
- NJ** Englewood Cliffs
Power Conversion and Control
Box 1251
201-569-0015
- NM** Albuquerque
BFA Corp
3705 Westerfield NE
505-292-1212
- NY** Syracuse
Ossmann Instruments
6666 Old Collamer Rd
315-437-6666

PA Valley Forge
J E Cuesta & Co
Box 188
215-265-5800

TX Houston
SESCO
4540 W 34 St
713-688-9656

VA Arlington
Compower
Box 9193
703-528-5293

WA Seattle
Underwood Assoc
331 Andover Park E
206-575-0123

WI Milwaukee
Schrieber-Arterbum
6110 W Lincoln Ave
414-258-7014

BRITISH COLUMBIA, CANADA

North Vancouver
National Electrolab
1536 Columbia St
604-985-0511

ONTARIO, CANADA

Mississauga
Webster Instruments
Box 427
416-275-2270

DENMARK

Naerum
SC Metric A/S
02-80-42-00

ENGLAND

London
Euro Electronic Inst
27 Camden Rd
01-2672748/9

FINLAND

Tapiola
Finn Metric OY
90-46-08-44

FRANCE

Severes
Tekelec Airtronc
City des Bruyeres; Rue Carle
Vernet
1-027-75-35

GERMANY, WEST

Bremen
Euroatlas GmbH
Zuro Panrepel 2
04-21-48631

ITALY

Milano
Silectron SPA
Via Boccaccio 2
02-899279

NETHERLANDS

Breda
Klaasing-Reuvers BV
Heerbaan 222
076-879520

NORWAY

Oslo
Metric AS
PB 80 Bekkelagshgd
02-28-26-24

SPAIN

Madrid
Unitronics SA
Princesa 1
242-52-04

For further catalog information, turn to
UpDate Service Card, page 201.

SWEDEN

Banvaktsvagen
Scandia Metric AB
08-82-04-00

SWITZERLAND

Erenbach
Witmer Elektronik AG
Seestrasse 141
01-915-35-61

TRANSCOM INC
SUB OF HI-G INC

580 Spring St
Windsor Locks, CT 06096
203-623-2481
Contact: Edward T Driscoll
■ Products & Services
Modems, voice-grade, low-speed
Audio response units

TRANS-LUX CORP

110 Richards Ave
Norwalk, CT 06854
203-853-4321
Contact: Peter E Costello
■ Products & Services
Teleprinters, impact
Paper for terminals

TRANS NET CORP

2005 Rt 22
Union, NJ 07083
201-688-7800
Contact: John Wilke
■ Products & Services
Data entry terminals, portable
Graphic display terminals
Intelligent (programmable) terminals
Remote line printers
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)

TRAN TELECOMMUNICATIONS CORP

2500 Walnut Ave
Marina Del Rey, CA 90291
213-822-3202

Advertising page 97

■ Products & Services
Concentrators
Modem sharing units
Multiplexers, time division
Multiplexers, intelligent
Multiplexers, group band
Packet processors
Port selectors
Port sharing units
Remote network processors
Channel service units
Digital service units
Line drivers
Modems, limited distance
Protocol analyzers
RTS emulator
Network management centers
Cables, electrical prefabricated extender
Computer/communications interfaces
Modem eliminators
Protocol converters
Select. & transfer equip., monitor & test
switch. equip.
Select. & transfer equip., reconfig. equip.
Switches, data communications, automatic
Data communications consultants
Data com. softw, comms processor vend.
Maintenance organizations

Branch Sales Offices:

CA Los Angeles
TRAN Telecommunications Corp
523 W Sixth St
213-628-3252

GA Atlanta
Flex-Comm International
3379 Peachtree Rd NE
404-237-9242

IL Hinsdale
TRAN
15 Spinning Wheel Rd
312-654-4775

NJ Wayne
TRAN
1534 State Highway 23
201-694-5121

VA Arlington
Gans & Pugh Assoc
2062 14 St N
703-527-3262

ONTARIO, CANADA

Toronto
TRAN Communications Ltd
1320 Shawson Dr
416-678-9504

ENGLAND

Swinden
Tran Telecommunications Ltd
112-118 Cricklade Rd
44-793-45676

ITALY

Milan
TRAN Systems SPA
Corso Porta Vigentina 33
392-546-1551

JAPAN

Tokyo
Sumitomo Shoji Kaisha Ltd
2.2 Hitotsubashi 1-chome
Chiyada-ku
03-217-6023

SOUTH AFRICA

Johannesburg
TRAN Systems Ltd
Box 31352 Braam 2017
11-724-0391

TRENDATA/STANDARD MEMORIES

3400 Segerstrom Ave
Santa Ana, CA 92704
714-540-3605

Contact: Carl J Peterson
■ Products & Services
Add-on main memory

Branch Sales Offices:

NJ Mahwah
Trendata/Standard Memories
200 Rt 17
201-529-4545

TRENDATA CORP

610 Palomar Ave
Sunnyvale, CA 94086
408-732-1790

Contact: Paul O'Neil
■ Products & Services
Acoustic couplers
Modems, limited distance
Cassettes
Cassette drives
Disc drives, floppy

Tape, paper
Tape punch/reader, paper
Teleprinters, impact
Teletypewriters

Branch Sales Offices:

AZ Phoenix
Trendata Corp
221 E Camelback St
602-264-9524

CA Los Angeles
Trendata Corp
6430 Sunset Blvd
213-462-0951

CA San Francisco
Trendata Corp
690 Market St
415-982-1230

CA San Diego
Trendata Corp
4250 Pacific Hwy
714-225-1422

FL Miami
Trendata Corp
1405 NW 167 St
305-624-2313

GA Atlanta
Trendata Corp
2028 Powers Ferry Rd
404-955-3944

IL Park Ridge
Trendata Corp
1420 Renaissance Dr
312-296-1184

MD Bethesda
Trendata Corp
4720 Montgomery Ln
301-986-0067

MA Dedham
Trendata Corp
850 Rear Providence Hwy
617-329-5720

NJ Union
Trendata Corp
2 Gelb Ave
201-964-6470

NY New York
Trendata Corp
555 W 57 St
212-977-4110

NC Charlotte
Trendata Corp
1987 Ferncliff Rd
704-366-3154

OH Cleveland
Trendata Corp
6500 Pearl Rd
216-845-7007

PA Philadelphia
Trendata Corp
1405 Locust St
215-545-5677

TX Dallas
Trendata Corp
1341 W Mockingbird
214-630-7300

WA Seattle
Trendata Corp
33100 Pacific Hwy So
206-838-2437

BRITISH COLUMBIA, CANADA

Vancouver
Trendata Canada Ltd
181 W Broadway
604-879-6368

ONTARIO, CANADA

Rexdale
Trendata Canada Ltd
50 Fasken Ave
416-675-1868

ONTARIO, CANADA

Ottawa
Trendata Canada Ltd
2615 Blackwell St
613-745-7091

QUEBEC, CANADA

St Laurent
Trendata Canada Ltd
3065 Halpern St
514-332-3310

TRI DATA

505 E Middlefield Rd
Mountain View, CA 94043
415-969-3700
Contact: Rich Hlava
■ Products & Services
Minicomputers
Add-on main memory
Cartridges
Cartridge drives
Disc drives, floppy
Floppy disc recorders
Data communications consultants

Branch Sales Offices:

IL Oakbrook
Howard Larsen
1000 Jorie
312-654-3644
MD Rockville
Alanthus
6011 Executive Blvd
301-770-1150
NJ Fort Lee
Herb Sprafkin, Reg Mgr
2083 Center
201-947-2093
TX Houston
Tel-Tex
3203 Audley
713-526-8326

TRITON ENGINEERING

16879 Oakmont Ave
Gaithersburg, MD 20760
301-340-9661
Contact: Byron Simms
■ Products & Services
Line drivers
Automatic calling units
Code converters
Computer/communications interfaces
Select. & transfer equip., patch. equip.

Branch Sales Offices:

MD Ashton
Blackwood Assoc
17904 Ednor View Tr
301-924-2858

TRIVEX INC

A MOHAWK DATA SCIENCES CO

3180 Red Hill Ave
Costa Mesa, CA 92626
714-546-7781
Contact: Richard J Martin
■ Products & Services
Interactive systems
Remote line printers
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)

If you know the name of the product, you can find out who makes it in the **Products & Services Directory, page 5.**

Branch Sales Offices:

CA Costa Mesa
Trivex
3180 Red Hill Av
714-546-7781
CA San Francisco
Trivex
2333 Anza
415-386-6344
IL Oak Brook
Trivex
1302 W 22 St
312-325-8108
NJ Fort Lee
Trivex
2175 Lemoine Av
201-461-4712

TRT DATA PRODUCTS INC
NORFIELD COMM DIV

3 Depot Place
East Norwalk, CT 06855
203-853-2777

Advertising page 34

Contact: Joseph Parisi

■ Products & Services
Concentrators
Line sharing units
Message switchers
Minicomputers
Modem sharing units
Port selectors
Port sharing units
Remote network processors
EIA cable testers
Code converters
Protocol converters
Switches, data communications, automatic
Switches, data communications, manual

Branch Sales Offices:

AZ Scottsdale
Barnhill Three Inc
7319 E Stetson Dr
602-947-7841
CA Mountainview
CSS
2680 Bayshore Frontage Rd
415-964-4335
CA Alamos
CSS
10915 Bloomfield
714-559-4403
CO Englewood
Barnhill Two Inc
7076 S Alton Way
303-779-3600
LA Baton Rouge
Barnhill Two Inc
440 N Foster
504-924-6826
MN Minnetonka
Collier Data Systems
12204 Glendale Ln
612-544-2292
MO St John
Midwest Marketing Inc
3606 Woodson
314-426-2500
NM Albuquerque
Barnhill Three Inc
1410-D Wyoming NE
505-299-7658
TX Houston
Barnhill Two Inc
10606 Hempstead Hwy
713-688-9971
TX Richardson
Barnhill Two Inc
1101 Executive Dr E
214-231-2573

UT Salt Lake City
Barnhill Three Inc
54 W 2100 S
801-484-4496

TRT TELECOMMUNICATIONS CORP

1747 Pennsylvania Ave NW
Washington, DC 20006
202-862-4500
Contact: Ken Gross
■ Products & Services
International record carriers
Message (including telegraph) carriers
Packet-switching carriers

Branch Sales Offices:

CA Los Angeles
3407 W. 6th St.
213-383-3701
CA Mountain View
2483 Old Middlefield Way
415-964-2622
CA San Francisco
141 Battery St.
415-956-5655
DC Washington
1747 Pennsylvania Ave. NE
202-862-4553
FL Miami
127 SE Second Ave
305-358-3308
FL Ft. Lauderdale
Box 8876
305-581-2565
GA Atlanta
3445 Peachtree Rd. NE
404-233-5447
IL Chicago
230 N Michigan Ave.
312-782-8605
LA New Orleans
344 Camp St
504-524-1038
LA Pearl River
Draw E
504-863-5312
MA Wellesley
Bobson Park Ave
617-237-6057
NY New York
630 Third Ave
212-986-2250
NY New York
26 Broadway
212-269-1127
OH Cleveland
Box 38070
216-235-3333
PA Pittsburgh
355 Fifth Ave
Dallas
13773 N Central Expy
214-234-8088
TX Houston
2537 S. Gessner
713-781-4976
PR Hato Rey
Box 2133
809-725-8065
ARGENTINA
Buenos Aires
La Carra 1551
26-53-29
BELGIUM
Ninove
13 Langemuntstraat
054-338462

COLOMBIA

Bogata
Apartado Aero
281-1949

ENGLAND

London
15 Stratton St
01-499-2795

GERMANY, WEST

Dusseldorf
Grunstrasse 6
02-11-32 02-55

PANAMA

Panama
Calle Samuel Lewis
23-7325

PERU

Lima
Casilla 345; Alcanfores
Miraflores
455-232

VENEZUELA

Caracas
Avenida San Martin

TRW COMMUNICATIONS GROUP

9841 Airport Blvd
Los Angeles, CA 90045
213-535-3821
Contact: Tex Beauchamp
■ Products & Services
Front-end processors
Minicomputers
Remote network processors
Modems, limited distance
DDP systems
Intelligent (programmable) terminals
Remote job entry terminals
Paper for terminals
Data communications consultants
Data com. softw, intel. term. vendors
Maintenance organizations
Used equipment

Branch Sales Offices:

CA Los Angeles
TRW Communications Group
9841 Airport Blvd
213-535-3821
CA Los Angeles
TRW CS&S
10880 Wilshire
213-475-9861
CO Denver
TRW CS&S
3560 Hwy 74
303-674-0475
DC Washington
TRW CS&S
301-730-5850
FL Orlando
TRW CS&S
3606 Silver Star Rd
800-327-6900
GA Atlanta
TRW CS&S
5924 Peachtree Ct E
404-449-5906
IL Chicago
TRW CS&S
1000 Jorie Blvd
312-986-6400
KS Kansas City
TRW CS&S
9290 Bond
913-492-5343
MA Boston
TRW CS&S
1605 Trapelo Rd
617-895-1540

NJ Fairfield

TRW Customer Service Div
70 New Dutch Ln
201-575-7110

NY NYC

TRW CS&S
666 5 Av
212-765-7900

OR Portland

TRW CS&S
7100 SW Hampton S 121
503-620-6775

PA Philadelphia

TRW CS&S
609-764-9082

TX Dallas

TRW CS&S
1770 Viceroy Dr
214-630-2540

TRW VIDAR

77 Ortega Ave
Mountain View, CA 94040
415-961-1000
Contact: Jack Seitz
■ Products & Services
Multiplexers, time division
Microwave/Laser Systems, Private

Branch Sales Offices:

CA Mountain View
TRW Vidar
77 Ortega Ave
415-961-1000
GA Atlanta
TRW Vidar
4340 Georgetown Sq
404-452-1030
MN Hastings
TRW Vidar
Box 368
612-437-1401
NY Fairport
TRW Vidar
550 Fairport Pk
716-377-2230
TX Richardson
TRW Vidar
Box 276
214-238-8260

TURNKEY SYSTEMS INC

50 Washington St
Norwalk, CT 06854
203-853-2884
Contact: Robert Bouton
■ Products & Services
Data com. softw, independ. softw houses

Branch Sales Offices:

CA Los Gatos
Turnkey Systems Inc
59 North Santa Cruz
408-395-6600
GA Atlanta
Turnkey Systems Inc
2814 New Spring Rd
404-432-2149
IL Lombard
Turnkey Systems Inc
2200 S Main St
312-629-6404
MI Southfield
Turnkey Systems Inc
21711 W Ten Mile Rd
313-353-7430
TX Dallas
Turnkey Systems Inc
12606 Greenville Ave
214-386-8604

AUSTRALIA

St Leonards
On-Line Systems Pty Ltd
619 Pacific Hwy

ENGLAND

Croydon Surrey
TSI Inter Ltd
22 Park St

FRANCE

Paris
TSI France
68 Rue Pierre Charron

GERMANY, WEST

Muenchen
TSI International GmbH
Hochbruckenstrasse 16

ITALY

Milan
Selesta Sistemi SPA
Via Meravigli 16

JAPAN

Chuo-ku
Nissho Electronics Corp
1-12-22 Tsukiji 1-Chome

NETHERLANDS

Arnhem
Raet
Postbus 4077

NEW ZEALAND

Wellington
Commercial Data Processing
71 Bailcott St

SPAIN

Madrid
General de Informatica SA
c/Agustin de Foxa

SWEDEN

Stockholm
SDP Software
Kungsgatan 65

VENEZUELA

Caracas
Analisis, Programacion y
Software
Edificio Exa, Pisa 8; Av
Libertador

To find out who makes a
certain product, turn to
Products & Services Directory, page 5.

TYMNET INC

20665 Valley Green Dr
Cupertino, CA 95014
408-446-7000
Contact: Ron Bamberg
■ Products & Services
Message (including telegraph) carriers
Packet-switching carriers
Value-added carriers
Message switchers
Minicomputers
Packet processors
Remote network processors
Acoustic couplers
Network management centers
Intelligent (programmable) terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Data com. softw, comms processor vend.
Lease and resale organizations
Maintenance organizations

Branch Sales Offices:

CA El Segundo
Tymnet Inc
2221 El Segundo Blvd
213-640-0278

IL Chicago
Tymnet Inc
150 N Wacker Dr
312-984-8940

MD Vienna
Tymnet Inc
8150 Leesburg Pike
703-827-9110

MA Boston
Tymnet Inc
One Federal St
617-482-0063

MN Minneapolis
Tymnet Inc
15 S Fifth St
612-339-5333

NJ Lyndhurst
Tymnet Inc
1200 Wall St W
201-460-0450

NY Rochester
Tymnet Inc
183 Main St E
716-546-5220

TX Houston
Tymnet Inc
6400 Southwest Fwy
713-780-4455

TX Dallas
Tymnet Inc
1341 Mockingbird Ln
214-638-4200

FRANCE
De St-Cloud
Tymnet Communications
Cegi-Tymshare, 106 Bureaux de la
Colline
602-70-12

ULTRACHEM

1400 N Walnut St
Wilmington, DE 19899
302-571-8520
Contact: Bob Whiting

UNICOM COMPUTER CORPORATION

2829 Bridgeway Blvd
Sausalito, CA 94965
415-332-2585
■ Products & Services
Add-on main memory
Disc drives, large
Tape drives, magnetic
Graphic display terminals
Remote line printers
Remote job entry terminals
Lease and resale organizations

UNITED DATA SERVICES CO INC

3024 N 33rd Dr
Phoenix, AZ 85017
602-269-2449
Contact: Attn: Sales Mgr
■ Products & Services
Line sharing units
Modem sharing units
Port sharing units
Line drivers
Cables, electrical prefabricated extender
Computer/communications interfaces
Modem eliminators

Branch Sales Offices:

AZ Phoenix
United Data Services Co Inc
3024 N 33 Dr
602-269-2449

UNIVERSAL DATA SYSTEMS INC

4900 Bradford Dr
Huntsville, AL 35805
205-837-8100
Advertising page Cover IV
Contact: George Grumbles
■ Products & Services
Modem sharing units
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Data content monitors
Protocol analyzers
Response-time monitors
Automatic answering units
Automatic calling units
Data access arrangement devices
Modem eliminators

Branch Sales Offices:

AL Huntsville
FM Associates Ltd
2804 S Mem Pkwy
205-536-9990

CA Redondo Beach
Group Three Elect
2615 Manhattan Beach Blvd
213-973-7844

DC Washington
Powell-Pendergraph
7979 Old Georgetown Rd
301-656-4535

FL Longwood
Southern Data Assoc
400 Royal Palm Ct
305-831-3311

HI Honolulu
Gray Assoc
691 Kalanipuu St
808-395-8669

IL Rosemont
Information Systems Inc
9800 W Farragut
312-671-7780

MA Lowell
S & S Electronics Inc
80 Stedman St
617-459-2578

MN St Paul
Cahill Assoc
315 N Pierce St
612-646-7217

MO Grandview
Digital Systems Sales Inc
4006 E 137 Ter
816-765-3337

NJ Englewood
Tecnimat
500 Grand Ave
201-569-4200

NM Las Cruces
BFA Corp
312 W Parker
505-523-0601

NM Las Cruces
BFA Corp
532 Amador Ave
505-523-0601

NY DeWitt
DB Assoc
3307 Erie Blvd E
315-446-0220

PA Ambler
Data Engineering Co
25 Skippack Pike
215-542-9876

PA Pittsburgh
WKM Assoc Inc
90 Clairton Blvd
412-892-2953

TX Richardson
Data Applications Corp
1300 E Arapaho Rd
214-231-4846

VA Richmond
Powell-Pendergraph
Box 29643
804-264-2341

WA Bellevue
Pacific Northwest Elect
14264 SE Eastgate Way
206-641-6444

ONTARIO, CANADA

Rexdale
ESE Ltd
1780 Albion Rd
416-749-2271

ENGLAND

Croydon
Cole Electronics
105-107 Lansdowne Rd
01-6886822

ISRAEL

Tel-Aviv
Bitcom Agencies
Box 13161
03-481269

SWEDEN

Solna
Svea Data Commun
Box 3004
08-820335

US INSTRUMENTAL RENTALS

2121 S El Camino Real
San Mateo, CA 94404
415-574-6006
Contact: Debbie Coyne
■ Products & Services
Data content monitors
Electrical-parameters test equipment
Protocol analyzers
Response-time monitors
Data entry terminals, portable
Remote job entry terminals
Lease and resale organizations
Used equipment

Branch Sales Offices:

CA Burbank
US Instrument Rentals
1008 W Burbank Blvd
213-849-5861

CA San Mateo
US Instrument Rentals
700 S Claremont
415-592-9230

CO Morrison
US Instrument Rentals
6097 Colorow Dr
303-697-4362

IL Des Plaines
US Instrument Rentals
2434 Dempster St
312-323-5003

MD Rockville
US Instrument Rentals
11716 Parklawn Dr
301-340-1353

MA Wakefield
US Instrument Rentals
591 N Av
617-246-1516

NJ Edison
US Instrument Rentals
505 Thornall Plaza
201-494-1500

TX Richardson
US Instrument Rentals
777 S Central Expwy
214-234-3392

TX Houston
US Instrument Rentals
6001 Gulf Frwy
713-923-2222

ONTARIO, CANADA
Rexdale
US Instrument Rentals
44 Faskin Dr
800-268-4928

UTEC CORP
871 Allwood Rd
Clifton, NJ 07012
201-779-0430
Contact: Ed Longo
■ Products & Services
Concentrators
Front-end processors
Line sharing units
Modem sharing units
Remote network processors
Line drivers
Modems, voice-grade, low-speed
Teletypewriters
Video data terminals (KSR)
Word processors, communicating
Automatic calling units
Code converters
Protocol converters
Select. & transfer equip., monitor & test
switch. equip.
Data com. softw, comms processor vend.

Branch Sales Offices:

NJ Cinnaminson
Utec Corp
807 Columbia Av
609-786-0520

NY Brooklyn
Long, Paveromo & Assoc
1881 Albany Av
212-252-5682

NY Garden City
RKS Assoc
141 Chestnut St
516-741-3958

ONTARIO, CANADA
Ottawa
Allcom Data Ltd
1980 Merivale Rd
613-226-2340

VALTEC CORP
99 Hartwell St
West Boylston, MA 01583
617-835-6082
Contact: Richard A Cerney
■ Products & Services
Fiber optic systems
Cables, optical fiber
Modem eliminators

Branch Sales Offices:

CA Pasadena
Advanced Techniques
3848 E Colorado Blvd
213-796-6187

CO Denver
PAR Assoc
3333 Quebec St
303-355-2363

IN Indianapolis
R O Whitesell & Assoc
6691 E Washington St
317-359-9283

MD Silver Springs
Carwithen Assoc Inc
1110 Fidler Ln
301-589-9040

MA Framingham
Sullivan Technical Sales
150 Speen St
617-620-0195

MN Satellite Beach
Reynolds & Assoc
476 North A1A
305-773-4700

NM Albuquerque
Trembley Assoc
119 Quincy NE
505-266-8616

NY Rochester
Application Specialists
3700 East Ave
716-586-6226

WA Bellevue
Comtec
1715 114 Av SE
206-453-1188

ONTARIO, CANADA
Markham
RF Communications Ltd
120 Gibson Dr
416-495-1030

FRANCE
Nanterre
Rotter, Miller & Prein s.a.
18 Rue D'arras

GERMANY, WEST
Munich
TS-Electronic
Widenmayerstr 50

SWEDEN
Vaxholm
Saven AB
Strandgatan 3

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page 201.

VAN SAN CORP
16735 E Johnson Dr
City of Industry, CA 91745
213-961-7211
Contact: Mr Vanlandingham
■ Products & Services
Furniture, cabinets, terminal enclosures

Branch Sales Offices:

ENGLAND
London
Power Equipment co
Kingsbury Works; Kingsbury Rd
01-205-0033

VARDON & ASSOCIATES
930 N Beltline Rd
Irving, TX 75061
214-252-7502
Contact: Ken Vardon

■ Products & Services
Modem sharing units
Port sharing units
Remote network processors
Acoustic couplers
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
DDP systems
Tape, paper
Tape punch/reader, paper
Intelligent (programmable) terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teletypewriters
Video data terminals (KSR)
Data access arrangement devices
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.
Data com. softw, intel. term. vendors
Lease and resale organizations
Maintenance organizations
Used equipment

VECTOR GRAPHIC INC

31364 Via Colinas
Westlake Village, CA 91361
213-991-2302
Contact: Lore Harp
■ Products & Services
DDP systems
Add-on main memory
Cassette drives
Disc drives, floppy
Disc drives, large
Intelligent (programmable) terminals
Teleprinters, impact
Video data terminals (KSR)
Word processors, communicating
Furniture, cabinets, terminal enclosures
Data com. softw, intel. term. vendors

VEN-TEL INC

2360 Walsh Ave
Santa Clara, CA 95050
408-984-2727
Advertising page 65
Contact: Richard McVicker
■ Products & Services
Acoustic couplers
Line drivers
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Automatic calling units
Data access arrangement devices
Modem eliminators

VERBATIM CORP

323 Soquel Way
Sunnyvale, CA 94086
408-245-4400
Contact: Bill Bollinger
■ Products & Services
Cartridges
Cassettes
Discs, floppy

Branch Sales Offices:

CA San Jose
Verbatim Corp
2025 Gateway Place
408-289-8192
CA Los Angeles
Verbatim Corp
1100 Glendon Av
213-473-0985

GA Snellville
Verbatim Corp
2250 North Rd
404-979-1212

IL Oak Brook
Verbatim Corp
800 Enterprise Dr
312-654-1990

KS Overland Park
Verbatim Corp
11030 Granada La
913-642-2185

MA E Longmeadow
Verbatim Corp
15 Benton Dr
413-525-4919

NJ Neptune
Verbatim Corp
7 Sarian Dr
201-922-8450

PA Pittsburgh
Verbatim Corp
1910 Cochran Rd
412-563-6655

TX Kingwood
Verbatim Corp
818B Burning Tree Dr
713-358-3196

TX Dallas
Verbatim Corp
11311 N Central Exprwy
214-696-2636

VA Manassas
Verbatim Corp
7900 Sudly Rd
703-361-1166

JAPAN Tokyo
Verbatim Far East Ltd
702 Hayama Bldg
03-446-2917

SWITZERLAND Geneva
Verbatim SA
Case Postale 296
022-349055

VERMONT RESEARCH CORP
Precision Park
North Springfield, CT 05150
802-886-2256
Contact: William Austin
■ Products & Services
Disc drives, large
Branch Sales Offices:

TX Plano
Vermont Research Corp
661 E 18 St
214-423-8772

VERSATEC INC
2805 Bowers Ave
Santa Clara, CA 95051
408-988-2800
Contact: Bob Murray
■ Products & Services
Digital plotters
Branch Sales Offices:

CA Santa Clara
Versatec
408-985-5810

CA Newport Beach
Versatec
714-752-5561

CT Hamden
Versatec
203-281-7604

GA Atlanta
Versatec
404-256-3427

IL Schaumburg
Versatec
312-885-9610

KS Mission
Versatec
913-384-2610

MD Rockville
Versatec
301-468-0960

MA Framingham
Versatec
617-879-8520

MI Southfield
Versatec
313-352-3703

MN Wayzata
Versatec
612-475-0265

NJ Ft Lee
Versatec
201-592-8008

NM Las Cruces
BFA Corp of AZ
505-523-0601

NM Albuquerque
BFA Corp of AZ
505-292-1212

NY Melville
Versatec
516-249-4422

NY E Syracuse
Ossman Instr
315-437-6666

NY Rochester
Versatec
716-473-5720

NY Vestal
Versatec
607-785-9947

OH Miamisburg
Versatec
513-859-5021

PA Pittsburgh
Versatec
412-344-3605

PA Wayne
Versatec
215-293-0920

TX Houston
Versatec
713-981-1967

TX Dallas
Versatec
214-386-5017

WA Bellevue
Versatec
206-453-9368

ONTARIO, CANADA Rexdale
Aherns & Sopher Ltd
416-245-4848

ARGENTINA Buenos Aires
Latindata SA
97-0793

AUSTRALIA Artarmon
Datamatic Pty Ltd
43 3333

BELGIUM Brussels
CN Rood SA
735-21-35

BOLIVIA La Paz
Latindata Ltda
23669

BRAZIL Rio de Janerio
Ciat Janet
264-7422

CHILE Santiago
Latindata Ltd
42209

DENMARK Redevre
A/S Datalog
009 451 415133

ENGLAND Berkshire
Versatec
27/35 London Rd
0635-42421

FINLAND Kauniainen
Oy Findip AB
90 502255

FRANCE Sevres
Tekelec-Airtronic
027 75 35

GERMANY, WEST Munich
Versatec GmbH
Summerstrasse 35
089 61 14 005

GREECE Athens
Kostas Karayannis
32 30 305

HONG KONG Hong Kong
Rikei Corp
5-450335

INDIA Bombay
Hinditron Computers Pvt Ltd
81 50 21

ISRAEL Tel Aviv
Versatec
03 483261 23

ITALY Rome
Technitron SPRL
805 647

JAPAN Tokyo
Rikei Corp
1-26-2 Nishi-Shinjuku
03 345-111

MALAYSIA FED OF Kuala Lumpur
Dataprep Sdn Bhd
Jalan Ampang
201898

MEXICO Mexico
Soluciones Graficas SA
905-575-5698

NETHERLANDS Rijswijk
CN Rood BV
070 99 63 60

NORWAY Oslo
Saven A/S
2 35 62 50

PHILIPPINES Makati Rizal
Decision Sys Corp
86-72-08

REPUBLIC OF CHINA Peking
Rikei Corp
66 8541

SINGAPORE

Dataprep Pte Ltd
2211311

SOUTH AFRICA

Johannesburg
Photracomp Pty Ltd
836 2941

SPAIN

Madrid
Anadig Ingenieros
433 2412

SWEDEN

Vaxholm
Saven Dataelektronik AB
0764 31580

SWITZERLAND

Geneva
Captronix SA
022 31 05 87

TAIWAN

Taipei
Syscom Computer Eng Co
02 7022156-8

TURKEY

Ankora
UTE-Muhendistik
26 7182

VERSITRON INC

6310 Chillum Pl NW
Washington, DC 20011
202-882-8464
Contact: David Sherrick
■ Products & Services
Modem sharing units
Multiplexers, time division
Port sharing units
Fiber optic systems
Line drivers
Modems, limited distance
MIL 188C adapters
Digitized voice processors
Modem eliminators
Switches, data communications, manual

Branch Sales Offices:

FL Pompano Beach
Saber Assoc
4081 N Federal Hwy
800-432-3007

ONTARIO, CANADA

Ottawa
Allcom Data Ltd
1980 Merivale Rd
613-226-2340

VIA WEST

2739 W Palm Ln
Phoenix, AZ 85009
602-269-3237
Contact: David Troupe
■ Products & Services
Inverse multiplexers
Line sharing units
Modem sharing units
Port selectors
Port sharing units
Data content monitors
Protocol analyzers
Telecommunications monitor
Code converters
Computer/communications interfaces
Protocol converters

Branch Sales Offices:

CA Fountain Valley
MQI
18381 Bandilier Cir
714-751-2005

CA Mountain View

MQI
2615 Miller Ave
415-948-8961

GA

Atlanta
Service Technologies
5057 Vernon Spring Dr
404-393-9791

IL

Northbrook
Marketech
3677 Woodhead Dr
312-291-1220

MA

Wayland
RH Associate Inc
325 Boston Post Rd
617-358-4701

NH

Nashua
Service Technologies
38 Spring St
603-883-5369

NY

Huntington Station
Service Technologies
Box 2795
516-231-5537

TX

Dallas
Remtek
13500 Midway Rd
214-387-2855

TX

Houston
Remtek
9730 Town Pk
713-277-2195

VOTRAX DIV

FEDERAL SCREW WORKS

500 Stephenson Highway
Troy, MI 48084
313-588-2050
Contact: Attn: Dir of Mktg & Sales
■ Products & Services
Audio response units

Branch Sales Offices:

CA Newport Beach
J H M Marketing Assoc
4340 Campus Dr
714-557-9181

TX

Houston
Texas Scientific; A Company of
Votrax
9630 Clarewood Dr
713-777-7171

ONTARIO, CANADA

Downsview
Electroneti Systems Ltd
62 Alness St
416-661-3673

ENGLAND

Hampshire
Dicoll Electronics Ltd
Bond Close Kingsland Estate
Basing Stroke 61551

GERMANY, WEST

Wiesbaden 6200
Votrax Div; Federal Screw Works
Reisstr 16
6121-463822

JAPAN

Tokyo
Columbia Import & Export Co Ltd
Cho 1-Chome; Chiyoda-Ku
03-291-0641-8

VYDEC INC

9 Vreeland Rd
Florham Park, NJ 07932
201-822-2100
Contact: Robert Blair
■ Products & Services
Discs, floppy
Word processors, communicating
Ribbons and supplies for terminals and
printers

Branch Sales Offices:

AL Birmingham
Benchmark Systems
21 Office Pl S, 2112 11 Ave
205-251-9999
AK Anchorage
Business Computers of Alaska Inc
3310 Arctic Blvd
907-274-2025
AZ Phoenix
Vydec Inc
101 North First Ave
602-254-5048
CA San Francisco
Vydec Inc
One California St
415-398-2550
CA Sacramento
Vydec Inc
1400 K St
916-441-2677
CA San Diego
Vydec Inc
110 W "A" St
714-231-1838
CA Newport Beach
Vydec Inc
4440 Von Karman Ave
714-752-1045
CA Los Angeles
Vydec Inc
Two Century Plaza
213-552-5444
CA Palo Alto
Vydec Inc
Two Palo Alto Sq
415-494-2211
CA Fresno
Mid-State Office Systems
833 E Fern
209-233-0777
CA Bakersfield
General Office Machines Co Inc
1119 California Ave
805-327-3207
CA Chico
Ray Morgan Co
554 Rio Lindo Rd
916-343-6065
CO Denver
Vydec Inc
50 South Steel St
303-333-5415
CT Hartford
Vydec Inc
One Financial Plaza
203-247-9281
DE Wilmington
Vydec Inc
One Customs House Sq
302-575-0770
FL Tampa
Systemark of Florida
4950 W Kennedy Blvd
813-872-5613
FL Coral Gables
Business Machines of Miami Inc
302 Bird Rd
305-444-6146

For further catalog information,
turn to **UpDate Service
Card, page 201.**

FL	Jacksonville Commercial Office Prods Inc 3304 Beach Blvd 904-398-1478	MI	Detroit Vydec Inc 400 Renaissance 313-259-9088	ND	Bismarck Copying and Visual Products Co 1700 Schafer St 701-223-6033
GA	Atlanta Vydec Inc 229 Peachtree St NE 404-659-6000	MI	Grand Rapids Commercial Equip Co 2225 Oak Industrial Dr NE 616-459-1161	OH	Cleveland Vydec Inc 1300 E 9 St 216-696-6060
HI	Honolulu Benchmark Systems 900 Fort St 808-521-2651	MN	Bloomington Dictation Systems Inc 1501 80 St W 612-884-9281	OH	Uniontown Graphic Systems 3458 Massillon Rd 216-896-2345
ID	Idaho Falls Yost Office Systems 675 E Anderson 208-523-3549	MO	St Louis Vydec Inc 1 Mercantile Ctr 314-621-4271	OH	Cincinnati Cincinnati Word Processing Inc 801 Linn St 513-481-2711
ID	Boise Finch Brown Inc 2340 Vista Ave 208-342-9345	MO	Jefferson City Modern Business Systems Inc 2211 St Mary's Blvd 314-635-6841	OH	Columbus Columbus Word Processing Inc 6600 Busch Blvd 614-885-3645
IL	Bloomington Vydec Inc 200 W Front 309-828-7327	NE	Omaha Modern Business Systems Inc 8627 F St 402-331-4036	OH	Youngstown Graphic Systems Inc 4986 Market St 216-744-2153
IL	Oakbrook Vydec Inc 1415 W 22 St 312-920-5850	NJ	Hackensack Vydec Inc 2 University Plaza 201-489-7727	OK	Oklahoma City BMI Div; Southwest Typewriter Co Inc 2241 NW 40 405-528-2097
IL	Chicago Vydec Inc One East Wacker Dr 312-467-5540	NJ	Morristown Vydec Inc 55 Madison Ave 201-540-9595	OK	Tulsa Advance Business Systems Inc Williams Ctr 918-583-3329
IL	Springfield Vydec Inc 828 S Second St 217-522-1780	NJ	Newark Vydec Inc 24 Commerce St 201-622-5992	OR	Portland Vydec Inc 620 SW 5 Ave 503-226-1144
IN	Indianapolis Baker Business Products Inc 7212 N Shadeland Ave 317-842-0886	NJ	Princeton Vydec Inc 1101-H State Rd 609-921-3080	OR	Salem Vydec Inc 495 State St 503-378-1913
IN	South Bend St John Business Machines Inc 1134 Lincolnway E 219-282-2355	NY	New York Vydec Inc 1114 Ave of Americas 212-398-5800	PA	Philadelphia Vydec Inc 1500 Market St 215-299-2264
IN	Evansville Modern Business Systems Inc 4800 Tecumseh Dr 209-233-0777	NY	Albany Nichols Business Equip 99 Washington Ave 518-465-8182	PA	Harrisburg Vydec Inc 100 Pine St 717-236-3073
IA	Des Moines Modern Business Machines Inc 621 E 2nd St 515-280-3554	NY	Syracuse Nichols Business Equip Deere Rd 315-463-8594	PA	Pittsburgh Vydec Inc 2 Oliver Plaza 412-281-2070
IA	Davenport Modern Business Systems 3546 Brady St	NY	Woodbury Vydec Inc 800 Woodbury Rd 516-364-9494	SC	Columbia The MacDonald Co 6041 Devine St 803-776-2400
KS	Topeka Modern Office Methods 3214 W 29 St 913-272-7704	NY	White Plains Vydec Inc 707 Westchester Ave 212-946-8030	SC	Charleston The MacDonald Co 1690 Highway 71 803-556-5932
KS	Shawnee Mission Techmark Corp 8245 Nieman Rd 913-888-8005	NY	Buffalo Buffalo Computer Co 19 Wansfell Rd 716-838-4095	TN	Nashville Modern Office Methods 200 Great Circle Rd 615-244-1771
LA	Metairie Benchmark Systems Inc of LA 2601 N Hullen St 504-885-4527	NY	Rochester Magtronic Office Systems 830 Linden Ave 716-381-7043	TN	Knoxville Preston Business Machines Co Inc 807 North 5 St 615-523-0489
MD	Baltimore Vydec Inc 36 S Charles St 301-837-7191	NC	Charlotte Benchmark Systems 645-G Pressley Rd 704-527-2771	TN	Memphis Modern Office Methods One Commerce 901-521-0036
MA	Boston Vydec Inc One Boston Pl 617-227-5151	NC	Raleigh Cavin's Inc Highway 70 919-781-1220	TX	Houston Vydec Inc 9 Greenway Plaza 713-840-5300
MI	Southfield Vydec Inc 3000 Town Ctr 313-358-0430	NC	Greensboro Cavin's Inc 1602 Spring Garden St 919-275-0454	TX	Dallas Vydec Inc 1200 Ford Rd 214-620-3800

TX Houston
Vydec Inc
9 Greenway Plaza
713-840-5300

TX El Paso
Office Machines Inc
2727 Wyoming
915-562-1414

TX San Antonio
Vydec Inc
8918 Tesoro Dr
512-824-2314

TX Lubbock
Dictaphone Sales Agency
1304 Ave "O"
806-762-8361

UT Salt Lake City
Type-A-Line Business Machine Co
168 E 2 St S
801-521-5310

VA Fairfax
Vydec Inc
4108 Chain Bridge Rd
703-385-0100

VA Rosslyn
Vydec Inc
1400 Key Blvd
703-841-2700

VA Richmond
Vydec Inc
707 E Main St
804-643-1542

WA Pasco
Basin Typewriter Co
122 S 4th
509-547-8896

WA Seattle
Vydec Inc
2620 Rainier Bank Tower
206-682-0915

WA Olympia
Vydec Inc
711 Capital Way
206-357-3640

WA Spokane
Business Information Systems Inc
710 Paulsen Bldg
509-838-6870

WI Milwaukee
Vydec Inc
111 E Wisconsin Ave
414-276-9691

W A BROWN INSTRUMENTS

PO Box 513
Orlando, FL 32802
305-425-5505
Contact: Edward Bucher
■ Products & Services
Acoustic couplers
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Disc drives, floppy
Bar code readers
Graphic display terminals
Intelligent (programmable) terminals
Remote line printers
Video data terminals (KSR)
Furniture, cabinets, terminal enclosures
Maintenance organizations

Branch Sales Offices:

AL Huntsville
W A Brown Instruments Inc
Box 4560
205-883-8660

FL Orlando
W A Brown Instruments Inc
222 Weber St
305-425-5505

GA Atlanta
W A Brown Instruments Inc
3070 Presidential Dr
404-455-1035

WANG LABORATORIES INC

One Industrial Av
Lowell, MA 01851
617-851-4111
Advertising pages 105,106
Contact: Ned Chang
■ Products & Services
Minicomputers
DDP systems
Batch terminals
Graphic display terminals
Intelligent (programmable) terminals
Interactive systems
Remote job entry terminals
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Automatic calling units
Data security devices, softw. security mod.

Branch Sales Offices:

CA Los Angeles
Wang Labs
6151 W Century Blvd
213-645-2872

IL Park Ridge
Wang Labs
1480 Renaissance Dr
312-298-7990

MD Rockville
Wang Labs
One Central Plaza
301-770-1903

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Turn to **UpDate Service Card**,
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WAVETEK DATA COMMUNICATIONS

9045 Balboa Ave
San Diego, CA 92123
714-279-2200
Contact: Marty Dasher
■ Products & Services
Concentrators
Front-end processors
Minicomputers
Multiplexers, time division
Remote network processors
Modems, multiport
Modems, voice-grade, low-speed
DDP systems
Tape, magnetic
Tape drives, magnetic
Audio response units
Video data terminals (KSR)
Automatic answering units
Data access arrangement devices
Modem eliminators
Maintenance organizations

Branch Sales Offices:

CA San Diego
Wavetek Data Communications
9045 Balboa Ave
714-279-2200

GA Stonemountain
Wavetek Data Communications
505 S Rays Rd
404-292-2355

IL La Grange
Wavetek Data Communications
5551 Linden Ave
312-246-6022

NY Larkspur
Wavetek Data Communications
700 Larkspur
415-461-4339

TX Dallas
Wavetek Data Communications
Box 400636
214-386-6380

WESTERN PERIPHERALS INC

1100 Claudina Pl
Anaheim, CA 92805
714-991-8700
Contact: Jack Olson
■ Products & Services
Cartridge drives
Tape drives, magnetic
Furniture, cabinets, terminal enclosures

Branch Sales Offices:

AZ Scottsdale
B F A Corp
4426 North Saddlebag Tr
602-994-5400

CA Orange
Gemini Assoc
461 S Glassell
714-997-7745

CA Fallbrook
Gemini Assoc
1665 Winterwarm Dr
714-728-4481

CA Long Beach
Gemini Assoc
2750 Bellflower Blvd
213-427-9600

CA San Jose
PBC Assoc
1926 Quebec Way
408-377-7001

CO Denver
B F A Corp
850 Lincoln St
303-837-1247

FL Orlando
Col-Ins-Co
1313 44 St
305-423-7615

HI Honolulu
Territorial Electronics
1221 Kapiolani
808-521-8724

IL Rolling Meadows
Systems Engineering Assoc
1225 Carnegie St
312-255-4820

IN Carmel
Systems Engineering Assoc
624B S Range Line Rd
317-846-2591

KS Shawnee Mission
Inland Assoc
2310 W 75th St
913-362-2366

MD Wheaton
Data Systems Marketing
11141 Georgia Av
301-933-0900

MA Acton
R D Stout Assoc
75 Great Rd
617-263-1128

MN Minneapolis
Systems Engineering Assoc
7601 N Kentucky Av
612-425-4455

MO St Louis
Inland Assoc
13100 Manchester Rd
314-821-3742

OH Dayton
E V Swenson
5250 Far Hills Av
513-435-2772

OR Portland
Pacific Northwest Electr
1525 SE 59th St
503-292-3505

PA Wyndmoor
Rohr Assoc
7902 Louise La
215-836-2200

TX Dallas
SCI Sales Inc
13771 N Central Expwy
214-234-8072

UT Salt Lake City
B F A Corp
395 Lawndale Dr
801-466-6522

WA Bellevue
Pacific Northwest Electr
14264 SE Eastgate Way
206-641-6444

WI Waukesha
Systems Engineering Assoc
2423 Pebblevalley Rd
414-547-6637

AUSTRALIA
Artarmon, NSW
Digital Electronics Pty Ltd
66-76 Dickson Ave
02-438-2444

AUSTRIA
Vienna
Margreiter Datasystems GmbH
Theresiengasse 67
0222-43-46-54

BELGIUM
Embourg
Megavolt SA
32b rue de Bleurmont
041-786733

ENGLAND
Reading, Berks
Sintrom Electronics Ltd
2 Arkwright Rd
0734-85464

FRANCE
Asnieres
Metrologie
La Tour d'Asnieres; 4, avenue
Laurent-Cely
1-791.44.44

GERMANY, WEST
Munich
Barton Automation GmbH
Bauerstrasse 15
089-371621

HONG KONG
Causeway Bay
Universal Systems Co
9-15, Yee Wo Street

INDIA
New Delhi
C H Krishnan & Associates
Krishna House; C-24, New Delhi
South Extension, Part 11
74387-622700

ISRAEL
Rama Hasharon
Dynamicon Ltd
Box 312

ITALY
Milano
Mactronics Italia
Via Torrazza 9
35-36-041

MEXICO
Mexico
Control y Proceso Electronico,
SA
Ave Juarez No 14-20
510-12-18

NETHERLANDS
Zeist
Datacare BV
2925 laan van Vollenhove
03404-21344

SWEDEN
Solna
Kentele Data AB
Industriv 14
08/83-98-00

SWITZERLAND
Wil
Datacare AG
Untere Bahnhofstrasse 19
073-22-05-92

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WESTERN TELEMATIC INC
2435 S Anne St
Santa Ana, CA 92704
714-979-0363
Contact: Michael Teague
■ Products & Services
Disc drives, floppy
Discs, floppy
Floppy disc recorders
Interactive systems
Branch Sales Offices:
BELGIUM
Brussels
Fimeca
Ave Albert 125

ENGLAND
Chesham Bucks
Zygal Dynamics Ltd
13 High St

SWITZERLAND
Zurich
Erni & Co
CH-8306 Bruttisellen

WESTERN UNION INTERNATIONAL,
INC
One WUI Plaza
New York, NY 10004
212-363-6400
Advertising page 15
Contact: Brian Gallagher
■ Products & Services
Facsimile-service carriers
International record carriers
Message (including telegraph) carriers
Packet-switching carriers
Satellite carriers
Specialized carriers
Branch Sales Offices:
CA San Francisco
111 Pine St.
415-986-3971

CT Norwalk
11 Belden Ave
203-847-5839

DC Washington
2100 M Street NW
202-293-7810

IL Hinsdale
Western Union Int'l
201 E Ogden
312-986-0250

LA New Orleans
2 Canal St
504-586-0041

NJ Morristown
Western Union Int'l
20 Park Pl
201-267-0646

NY New York
Western Union Int'l
26 Broadway
212-363-6432

TX Houston
16630 Imperial Valley Dr
713-445-7750

ENGLAND
London
1-3 Smithfield St
01-588-1914

LEBANON
Beirut
Verdun St
649-5266

GERMANY, WEST
Frankfurt Am Main
Grosse Bockenheimer Str 35
611-294008

THE WESTERN UNION TELEGRAPH
CO
1 Lake St
Upper Saddle River, NJ 07458
201-825-5549
Contact: James Foster
■ Products & Services
Message (including telegraph) carriers
Satellite carriers
Specialized carriers
Message switchers
Modems, voice-grade, low-speed
Modems, voice-grade, medium speed
Modems, voice-grade, high-speed
Tape, paper
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Automatic answering units
Automatic calling units
Computer/communications interfaces
Data access arrangement devices
Furniture, cabinets, terminal enclosures
Paper for terminals
Ribbons and supplies for terminals and
printers
Maintenance organizations
Branch Sales Offices:
CA Oakland
Western Union Tel Co
303 Hegenberger Rd
415-568-6126

CA Los Angeles
Western Union Tel Co
745 S Flower St
213-627-4321

GA Atlanta
Western Union Tel Co
56 Marietta St NW
404-688-9820

IL Chicago
Western Union Tel Co
427 S LaSalle St
312-435-1700

MA Wellesley
Western Union Tel Co
40 William St
617-237-2580

MI Southfield
Western Union Tel Co
23100 Providence Dr
313-559-7850

MN Minneapolis
Western Union Tel Co
317 Second Av S
612-335-2731

MO Kansas City
Western Union Tel Co
Tenmain Center
816-474-4330

NJ Cherry Hill
Western Union Tel Co
950 Kings Hwy N
215-928-0300

NY New York
Western Union Tel Co
60 Hudson St
212-577-4321

TX Dallas
Western Union Tel Co
9229 LBJ Frwy
214-690-0071

VA McLean
Western Union Tel Co
7916 Westpark
703-790-2313

WA Seattle
Western Union Tel Co
655 S Orcas St
206-764-4511

**WESTINGHOUSE OPERATING
SOFTWARE PRODUCTS**

2040 Ardmore Blvd
Pittsburgh, PA 15221
412-256-5583
■ Products & Services
Data com. softw, independ. softw houses

WORD/DATA ENVIRONMENTS INC

2720 Sisson St
Baltimore, MD 21211
301-889-5553
Contact: VP Mktg
■ Products & Services
Furniture, cabinets, terminal enclosures
Microfilm equipment, systems and services

WORDSTREAM CORPORATION

300 E 44th St
New York, NY 10017
212-557-3500
Contact: Peter E Hermann
■ Products & Services
Remote line printers
Video data terminals (KSR)
Word recognition units
Word processors, communicating

Branch Sales Offices:

CA Los Angeles
Wordstream Corp
2029 Century Park E
213-552-9280

IL Chicago
Wordstream Corp
Oak Brook Regency Towers
312-986-2900

NY New York
Wordstream Corp
1211 Ave of Americas
212-921-9400

TX Dallas
Wordstream Corp
8585 N Stemmons Frwy
214-631-0937

VA Arlington
Wordstream Corp
1745 Jefferson Davis Hwy
703-521-3700

WRIGHT LINE INC

160 Gold Star Blvd
Worcester, MA 01606
617-852-4300
Contact: James J Daly
■ Products & Services
Discs, floppy
Disc packs
Tape, magnetic
Furniture, cabinets, terminal enclosures

XEBEC SYSTEMS

2985 Kifer Rd
Santa Clara, CA 95051
408-988-2550
Contact: Jan Masters
■ Products & Services
Disc drives, floppy
Disc drives, large
Tape drives, magnetic

Branch Sales Offices:

NH Amherst
Xebec Systems
Box 452
603-673-6233

NJ Ft Lee
TMA
201-224-6911

WA Walla Walla
N W Tech
509-529-2051

If you know the name of the
product, you can find out who
makes it in the **Products &
Services Directory, page 5.**

XEROX BUSINESS SYSTEMS

701 S Aviation Blvd MS A1-10
El Segundo, CA 90245
213-679-4511
Contact: Keith T Dayidson
■ Products & Services
Remote job entry terminals
Teleprinters, impact
Teletypewriters

Branch Sales Offices:

CA San Francisco
Xerox Corp
One California St
415-393-1800

CA Santa Clara
Xerox Corp
5000 Old Ironsides Dr
408-988-8800

CA Los Angeles
Xerox Corp
10100 Santa Monica Blvd
213-552-0124

CO Denver
Xerox Corp
3333 Quebec St; Bldg B
303-320-6700

CT Hartford
Xerox Corp
One Financial Plaza
203-278-9810

GA Atlanta
Xerox Corp
10 Perimeter Park
404-451-2755

IL Chicago
Xerox Corp
8550 W Bryn Mawr Ave
312-693-6060

IN Indianapolis
Xerox Corp
4740 Kingsway Dr
317-257-7020

KS Overland Park
Xerox Corp
6400 Glenwood
913-677-3431

LA Metairie
Xerox Corp
3501 North Causeway Blvd
504-834-2710

MA Lexington
Xerox Corp
191 Spring St
617-861-1670

MI Southfield
Xerox Corp
26555 Evergreen
313-355-9400

MN Bloomington
Xerox Corp
2850 Metro Dr
612-854-5052

MO St Louis
Xerox Corp
1 Mercantile Center
314-342-1190

NJ Parsippany
Xerox Corp
1719 Rt 10
201-455-1200

NY New York
Xerox Corp
40 West 57 St
212-397-7300

NY Rochester
Xerox Corp
132 Allens Creek Rd
716-442-9470

OH Valley View
Xerox Corp
5811 Canal Rd
216-524-8410

OH Columbus
Xerox Corp
6600 Busch Blvd
614-436-3068

OH Cincinnati
Xerox Corp
11499 Chester Rd
513-772-7020

OK Oklahoma City
Xerox Corp
4334 NW Expwy
405-840-3848

PA Pittsburgh
Xerox Corp
875 Greentree Rd
412-922-7010

PA Ft Washington
Xerox Corp
1075 Virginia Dr
215-628-8484

TX Dallas
Xerox Corp
8585 Stemmons Frwy
214-637-5788

TX Houston
Xerox Corp
1717 St James Pl
713-622-0540

VA Arlington
Xerox Corp
1616 North Ft Myer Dr
703-841-5250

WA Seattle
Xerox Corp
1400 112 NE
206-453-2222
WI Milwaukee
Xerox Corp
2200 N Mayfair Ave
414-258-4000

XYCON COMPUTER SYSTEMS

26611 SR 530
Arlington, WA 98223
206-435-5015
Contact: Attn: VP Mktg
■ Products & Services
Minicomputers
DDP systems
Add-on main memory
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Graphic display terminals
Intelligent (programmable) terminals
Remote job entry terminals
Teleprinters, impact
Video data terminals (KSR)
Data com. softw, comms processor vend.
Data com. softw, distr. dp systems vend.

Branch Sales Offices:
DC Washington
IMR Associates
1705 DeSales St NW
202-466-3330

ZENTEC
2400 Walsh Ave
Santa Clara, CA 95050
408-246-7662
Contact: Paul La Voie
■ Products & Services
Intelligent (programmable) terminals

Branch Sales Offices:
CA Newport Beach
Zentec Corp
1400 Quail St
714-975-1285

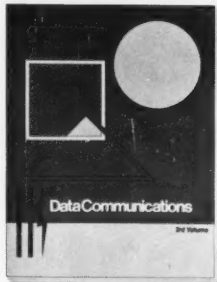
CA Santa Clara
Zentec Corp
2400 Walsh Ave
408-246-7662

If you know the name of the product and want to know who makes it, turn to **Products & Services Directory, page 8.**

IL Palatine
Zentec Corp
117 E Palatine Rd
312-991-015
MA Woburn
Zentec Corp
21 Cummings Pk
617-935-4511
NY White Plains
Zentec Corp
595 W Hartsdale Ave
914-428-2801
TX Richardson
Zentec Corp
725 S Central Exp
214-690-9265

ZETA CORPORATION
1 W Deerpark Rd 104
Gaithersburg, MD 20760
301-840-1070
Contact: Ray Reid
■ Products & Services
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Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Terminal controllers

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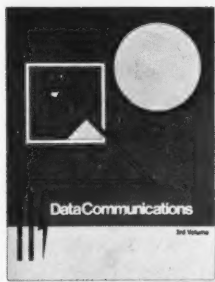
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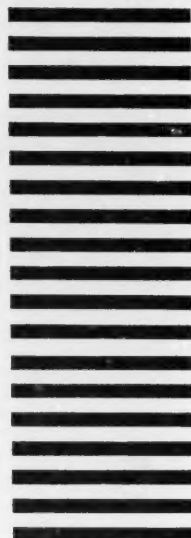
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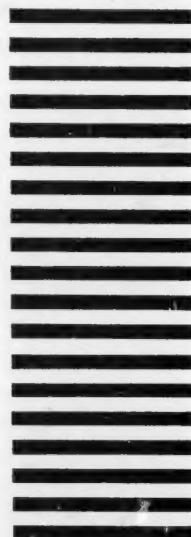
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